

**Draft**  
**Technical Support Document for**  
**HWC MACT Standards**

**Volume II:**  
**HWC Emissions Database**

U.S. Environmental Protection Agency  
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## ABSTRACT

This report provides detailed test results, design information, and operating parameters for 35 cement kilns, 12 LWA kilns, and 77 incinerators. Emissions information includes trace metals (Arsenic, Antimony, Barium, Beryllium, Cadmium, Chromium, Lead, Nickel, Mercury, Selenium, Silver, Thallium), particulate, HCl/Cl<sub>2</sub>, HC, CO, semi-volatile organic compounds (SVOC), volatile organic compounds (VOC), and dioxin/furan. Information also is provided for the fuel, waste, raw material, spikes, clinker, and collected ash streams. Analyses for these streams consist mainly of metals and chlorine, however, some VOC and SVOC analyses also are available. Detailed design and operating parameters for the combustion and air pollution control equipment also are provided.

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## SECTION 1

### INTRODUCTION

The U.S. Environmental Protection Agency (EPA) regulates the burning of hazardous waste in incinerators under 40 CFR Part 264/265, Subpart O and in boilers and industrial furnaces under 40 CFR Par 266, Subpart H. The Agency is proposing revised regulations applicable to these hazardous waste combustion (HWC) devices. This document provides a detailed listing of all test results used in the development of the proposed regulations and is the second in a series of seven volumes of technical background documents for the rule. These include:

*Technical Support Document for HWC MACT Standards, Volume I: Description of Source Categories*, which provides process descriptions of major design and operating features including different process types and air pollution control devices currently in use and potentially applicable to various combustion source categories; description of air pollution control devices including design principles, performance and operating efficiency, process monitoring options, and upgrade/retrofit options; and major source determination for all sources including a discussion on the methodology used to estimate annual emissions, assumptions used, and an emissions summary for each source listing each HAP.

*Technical Support Document for HWC MACT Standards, Volume II: HWC Emissions Data Base*, which contains a summary of the emissions information on toxic metals, particulate matter (PM), HCl and Cl<sub>2</sub>, hydrocarbons, carbon monoxide, semi-volatile and volatile organic compounds, and dioxins/furans from HWCs. Other detailed information encompassed in the data summary include company name and location, emitting process information, combustor design and operation information, APCD design and operation information, stack conditions during testing, feed stream feed rates, and emissions rates of HAPs by test condition.

*Technical Support Document for HWC MACT Standards, Volume III: Selection of Proposed MACT Standards and Technologies*, which identifies the MACT floor for each HAP and source category for existing sources and new sources and discusses the approach used to define the floor and beyond-the-floor alternatives considered for the proposed rule.

*Technical Support Document for HWC MACT Standards, Volume IV: Compliance with the Proposed HWC Standards*, which contains detailed discussions of continuous emissions monitors and operating limits for the proposed rule.

*Technical Support Document for HWC MACT Standards, Volume V: Engineering Costs*, which contains the cost estimates for APCD requirements for existing and new facilities to meet the proposed emissions standards.

*Technical Support Document for HWC MACT Standards, Volume VI: Development of Comparable Fuels Specifications*, which summarizes the composition including hazardous species in benchmark fossil fuels such as gasoline, #2 fuel oil, #4 fuel oil, and #6 fuel oil. This information is being used to develop specifications which EPA is considering to allow comparable fuels to be excluded from the definition of hazardous waste.

*Technical Support Document for HWC MACT Standards, Volume VII: Miscellaneous Technical Issues*, which provides additional information on several topics such as the treatment of measurements below analytical detection limits, the procedures for handling missing data, and the rationale for grouping metals of similar volatility. The impact of these methodologies on the proposed MACT limits, the cost estimates, and the national emissions estimates are also discussed.

In addition to these technical background documents, a companion Regulatory Impact Analysis report has been prepared in support of the rule.

Emission standards are being proposed for three types of hazardous waste incineration facilities:

- Cement Kilns
- Lightweight Aggregate Kilns
- Incinerators (On-site and Commercial)

The hazardous air pollutants for which emission standards are proposed are:

- Mercury (Hg)
- Low Volatility Metals (LVM)
- Semi-Volatile Metals (SVM)
- Particulate Matter (PM)
- Hydrochloric Acid and Chlorine as Total Chlorine (HCl/Cl<sub>2</sub>)
- Carbon Monoxide (CO)
- Hydrocarbons (HC)
- Dioxins/Furans (PCDD/PCDF)

These emission standards are being developed through the "maximum achievable control technology" (MACT) approach defined in Title 3 of the 1990 Clean Air Act Amendments (CAA). In this approach the MACT floor standard for existing facilities is established at the level of the average performance of the best 12% of existing sources. Depending on the additional benefits and costs, EPA may elect to set more stringent, but technically achievable, beyond-the-floor (BTF) standards for specific HAPs. In the proposed rule, BTF standards have been set for PCDD/PCDF and for Hg for all HWC source categories, and BTF standards have been proposed for HCl/Cl<sub>2</sub> for LWAKs only. In addition to existing sources, MACT standards are also proposed for new

sources that begin burning hazardous waste after the proposed regulation is in place.

This report provides detailed test results, design information, and operating parameters for 35 cement kilns, 12 LWA kilns, and 77 incinerators. Emissions information includes trace metals (Arsenic, Antimony, Barium, Beryllium, Cadmium, Chromium, Lead, Nickel, Mercury, Selenium, Silver, Thallium), particulate, HCl/Cl<sub>2</sub>, HC, CO, semi-volatile organic compounds (SVOC), volatile organic compounds (VOC), and dioxin/furan. Information also is provided for the fuel, waste, raw material, spikes, clinker, and collected ash streams. Analyses for these streams consist mainly of metals and chlorine, however, some VOC and SVOC analyses also are available. Detailed design and operating parameters for the kilns and air pollution control equipment are also provided.

The information contained in this report is divided into two groups. The first group titled "Summary Information" provides population statistics for selected analyses and streams. The second group titled "Detailed Information" provides a complete listing of all information extracted. The Summary Information is included in Section 2 and 3. The Detailed Information is included in the Appendices listed below.

**APPENDIX A:**      Detailed listing of all cement kiln information extracted from 35 emitting processes.

**APPENDIX B:**      Detailed listing of all LWA kiln information extracted from 12 emitting processes.

**APPENDIX C:**      Detailed listing of all incinerator information extracted from 77 emitting processes.

## SECTION 2

### EMISSIONS DATA SUMMARY

This section summarizes stack emissions from all sources tests evaluated for cement kilns, LWA kilns, and incinerators. Tables 1 and 2 provide statistics for CAAA and other HAP emissions, respectively. Each table provides the mean concentration of all emitting processes, the maximum and minimum concentrations, the relative standard deviation, number of runs, and detection ratio “detect ratio”. An emitting process is a collection of combustion devices which emit to a common stack or collection of stacks. For example, a facility may have two combustion devices whose emissions are combined and exhausted through a common stack. This would be classified as a single emitting process. However, if each combustion device had its own stack, each device would be considered as a separate emitting process. The detection ratio is the ratio of the sum of detected values to the sum of detected and non-detected values. A detect ratio of one indicates all of the data was detected. A detect ratio of zero indicates all of the data was not detected. All numbers are presented to three significant digits.

Table 1 summarizes the emissions of Clean Air Act Amendment (CAAA) compounds from cement kilns, LWA kilns, and incinerators. Compounds that were also measured but are not on the CAAA list are shown in Table 2. The tables show high variability for most substances as indicated by the relative standard deviation and spread between the maximum and minimum values. This variability can be attributed to differences in device design and operation, data quality issues, feed stream spiking, number of runs, and detection limits. A discussion of the impact of design and operation is considered in other volumes of the series. To determine the impact of data quality issues on data variability would require an analysis of method specific parameters such as blanks, spikes, and duplicates. This information was only sporadically evaluated as part of this project as shown in Table 3. Therefore, the impact of data quality on emission variability cannot be assessed. Information on feed stream spiking is provided in Section 3.0. Tables 1 and 2 indicate that the variability increases as the number of runs and detection ratio increase. This is expected since the number of runs is a function of the number of sources tested. Additional sources result in increased design and operating variability resulting in more emissions variability. As the detection ratio increases more emissions data is measured at levels above the detection limit. If the detection ratio is low, most of the emissions data is not detected. Under these conditions, low variability is expected since for a given substance the analytical detection limits are largely fixed by the analytical method and testing requirements. It also should be noted that substances with mostly nondetected data (detection ratio around 0) do not provide as accurate an assessment of emissions as substances with mostly detected data (detection ratio around 1). From Tables 1 and 2 it is shown that SVOC are detected less often than substances in other groups. In addition, fewer emissions results are available for SVOC. In general, more emissions data provides better representation of the source population.

To provide a better understanding of the emissions variability indicated in Tables 1 and 2, Figures 1 - 8 are provided which show the percent of emitting processes with emissions

concentrations less than a given value. For example, in Figure 1a, 90 percent of the cement kiln emitting processes had beryllium emissions concentrations less than approximately 3 ug/dscm at 7% oxygen. The figures provide mostly CAAA substances, however, particulate, CO and HC, and Dioxin and Furan TEQ emissions concentrations are also provided. Nondetected data have been included in the figures.

TABLE 1. CAAA EMISSIONS FROM HAZARDOUS WASTE COMBUSTION.

System Type	Category	Unit	Substance	Mean	Median	Maximum	Minimum	Rel. Std.	Runs	Detect Ratio**
CEMENT KILN	Dioxin & Furan	ng/dscm 7%O2	4D 2378	0.462	0.014	7.66	0.000153	308	116	0.979
CEMENT KILN	Halogens	ppmv 7%O2	Chlorine	1.1	0.196	39.8	0.000823	384	169	0.951
CEMENT KILN	Halogens	ppmv 7%O2	HCl	28.8	13.9	185	0.0569	134	172	1
CEMENT KILN	Metals	ug/dscm 7%O2	Antimony	55	4.27	506	0.12	174	115	0.0365
CEMENT KILN	Metals	ug/dscm 7%O2	Arsenic	9.02	2.14	101	0.33	172	157	0.257
CEMENT KILN	Metals	ug/dscm 7%O2	Beryllium	1.11	0.335	10.1	0.0393	154	157	0.208
CEMENT KILN	Metals	ug/dscm 7%O2	Cadmium	43.1	16	576	0.0686	183	157	0.748
CEMENT KILN	Metals	ug/dscm 7%O2	Chromium	21.1	10.5	506	0.0686	233	154	0.545
CEMENT KILN	Metals	ug/dscm 7%O2	Chromium (Hex)	10.5	1.64	316	0.0278	417	136	0.26
CEMENT KILN	Metals	ug/dscm 7%O2	Lead	563	112	6450	1.9	200	157	0.813
CEMENT KILN	Metals	ug/dscm 7%O2	Mercury	256	23	4570	1.08	316	99	0.819
CEMENT KILN	Metals	ug/dscm 7%O2	Nickel	36.1	10.2	506	1.07	263	28	0.248
CEMENT KILN	Metals	ug/dscm 7%O2	Selenium	27.1	25.6	101	0.979	104	23	0.126
CEMENT KILN	PAH	ng/dscm 7%O2	Naphthalene	231000	124000	2280000	7900	157	78	0.997
CEMENT KILN	SVOC	ng/dscm 7%O2	1,2,4-Trichlorobenzene	1950	927	8450	71.3	122	79	0.366
CEMENT KILN	SVOC	ng/dscm 7%O2	1,4-Dichlorobenzene	1990	975	7460	319	120	22	0.664
CEMENT KILN	SVOC	ng/dscm 7%O2	1,4-Phenylenediamine	1460	1350	2100	922	24.5	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	2,4,5-Trichlorophenol	1630	1210	10500	317	120	23	0.415
CEMENT KILN	SVOC	ng/dscm 7%O2	2,4,6-Trichlorophenol	9070	1690	54900	326	156	38	0.899
CEMENT KILN	SVOC	ng/dscm 7%O2	2,4-Dinitrophenol	4540	4620	8580	924	36.7	18	0.16
CEMENT KILN	SVOC	ng/dscm 7%O2	2,4-Dinitrotoluene	1210	1150	1900	339	31.7	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	2-Methylphenol (o-Cresol)	35000	9500	279000	151	195	57	0.997
CEMENT KILN	SVOC	ng/dscm 7%O2	3,3-Dichlorobenzidine	752	689	1260	73	42.1	18	0.00539
CEMENT KILN	SVOC	ng/dscm 7%O2	3,3-Dimethoxybenzidine	1490	1440	2650	832	34.9	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	3-Methylphenol (m-Cresol)	13500	13500	13500	13500	0	1	1
CEMENT KILN	SVOC	ng/dscm 7%O2	4,4-Methylenedianiline	1140	1190	1710	663	26	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	4,6-Dinitro-o-Cresol	2240	2060	3760	422	37.8	18	0.119
CEMENT KILN	SVOC	ng/dscm 7%O2	4-Aminobiphenyl	362	343	552	40	36.4	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	4-Methylphenol (p-Cresol)	81800	20300	534000	2230	173	45	1
CEMENT KILN	SVOC	ng/dscm 7%O2	4-Nitrobiphenyl	814	754	1210	490	27.9	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	4-Nitrophenol	17800	9120	62300	946	104	24	0.492
CEMENT KILN	SVOC	ng/dscm 7%O2	Acetophenone	32800	21000	84200	3540	89.2	18	0.934
CEMENT KILN	SVOC	ng/dscm 7%O2	Aniline	1070	1040	1620	703	22.8	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	Benzidine	508	503	830	304	29	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	bis(2-chloroethyl) Ether	1470	1410	2510	537	31.4	18	0.175
CEMENT KILN	SVOC	ng/dscm 7%O2	bis(2-ethylhexyl) Phthalate	45900	6030	949000	139	296	68	0.99
CEMENT KILN	SVOC	ng/dscm 7%O2	Dibenzofuran	58600	27800	321000	2630	126	55	1
CEMENT KILN	SVOC	ng/dscm 7%O2	Dimethylphthalate	471	409	1270	217	48.8	22	0.174
CEMENT KILN	SVOC	ng/dscm 7%O2	Ethylbenzene	65500	21500	693000	16.3	215	67	1
CEMENT KILN	SVOC	ng/dscm 7%O2	Hexachlorobenzene	1230	1230	2110	185	38.9	22	0
CEMENT KILN	SVOC	ng/dscm 7%O2	Hexachlorobutadiene	1980	1820	3770	198	45.8	18	0.114
CEMENT KILN	SVOC	ng/dscm 7%O2	Hexachlorocyclopentadiene	2240	2120	3740	330	40.8	18	0.117
CEMENT KILN	SVOC	ng/dscm 7%O2	Hexachloroethane	1980	1720	3630	691	37	18	0.133
CEMENT KILN	SVOC	ng/dscm 7%O2	Hydroquinone	2010	1940	4840	339	57.8	18	0.259
CEMENT KILN	SVOC	ng/dscm 7%O2	Methyl Methacrylate	1540	1420	3510	296	55.5	19	0
CEMENT KILN	SVOC	ng/dscm 7%O2	N-Nitrosodimethylamine	6860	7510	8450	2340	32.7	6	0.057
CEMENT KILN	SVOC	ng/dscm 7%O2	n-Nitrosomorpholine	3020	2650	5550	1670	37.3	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	Nitrobenzene	1660	1330	6930	185	84.2	18	0.307
CEMENT KILN	SVOC	ng/dscm 7%O2	o-Anisidine	1590	1580	2220	1040	19.2	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	o-Toluidine	1010	981	1590	693	23.6	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	Pentachloronitrobenzene	3370	3130	5210	1960	31.6	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	Pentachlorophenol	1820	1940	2490	405	27.7	22	0
CEMENT KILN	SVOC	ng/dscm 7%O2	Phenol	234000	87200	1710000	389	173	73	0.996
CEMENT KILN	VOC	ng/dscm 7%O2	1,1,1-Trichloroethane	23700	1710	351000	291	305	70	0.296
CEMENT KILN	VOC	ng/dscm 7%O2	1,1,2,2-Tetrachloroethane	4650	751	37900	299	177	26	0.889
CEMENT KILN	VOC	ng/dscm 7%O2	1,1,2-Trichloroethane	2170	1090	19600	260	174	27	0.618
CEMENT KILN	VOC	ng/dscm 7%O2	1,1-Dichloroethane	646	440	2290	173	88	24	0.458
CEMENT KILN	VOC	ng/dscm 7%O2	1,1-Dichloroethene	3410	712	22900	82.8	152	28	0.933
CEMENT KILN	VOC	ng/dscm 7%O2	1,2-Dichloroethane	4020	634	31700	84.3	212	25	0.874
CEMENT KILN	VOC	ng/dscm 7%O2	1,2-Dichloropropane	894	654	2460	181	72.8	25	0.469
CEMENT KILN	VOC	ng/dscm 7%O2	1,4-Dioxane	10800	6750	25000	497	119	3	1
CEMENT KILN	VOC	ng/dscm 7%O2	Acetonitrile	50700	57300	84500	11600	47.3	19	1
CEMENT KILN	VOC	ng/dscm 7%O2	Acrolein	274000	172000	633000	72500	83.8	6	1
CEMENT KILN	VOC	ng/dscm 7%O2	Acrylonitrile	334000	336000	514000	2550	51.9	7	1
CEMENT KILN	VOC	ng/dscm 7%O2	Allyl chloride	17300	14800	39900	7760	45.2	22	1
CEMENT KILN	VOC	ng/dscm 7%O2	Benzene	624000	399000	2330000	880	96.6	68	1
CEMENT KILN	VOC	ng/dscm 7%O2	Bromoform	1420	1170	4150	81.9	72.3	22	0.514
CEMENT KILN	VOC	ng/dscm 7%O2	Bromomethane	31900	6320	555000	1.98	343	25	1
CEMENT KILN	VOC	ng/dscm 7%O2	Carbon disulfide	225000	102000	1630000	0.573	148	62	1
CEMENT KILN	VOC	ng/dscm 7%O2	Carbon Tetrachloride	1720	627	17300	57.4	196	31	0.823
CEMENT KILN	VOC	ng/dscm 7%O2	Chlorobenzene	36300	18600	640000	5700	238	53	1
CEMENT KILN	VOC	ng/dscm 7%O2	Chloroethane	22300	3090	209000	1070	248	29	0.985
CEMENT KILN	VOC	ng/dscm 7%O2	Chloroform	8020	4460	89400	1290	206	27	1
CEMENT KILN	VOC	ng/dscm 7%O2	Chloromethane	260000	201000	843000	61.6	78.9	55	0.987
CEMENT KILN	VOC	ng/dscm 7%O2	Cumene	2010	1810	3400	1200	34.1	19	1
CEMENT KILN	VOC	ng/dscm 7%O2	Ethyl Acrylate	946	732	2140	260	62.2	19	0
CEMENT KILN	VOC	ng/dscm 7%O2	Iodomethane	7880	3220	29300	567	114	22	0.961

CEMENT KILN	VOC	ng/dscm 7%O2	m,p-Xylene	92200	49200	1660000	300	253	50	1
CEMENT KILN	VOC	ng/dscm 7%O2	Methyl Ethyl Ketone	30100	21800	153000	125	102	60	0.994
CEMENT KILN	VOC	ng/dscm 7%O2	Methylene Chloride	2360000	40500	59200000	1.41	449	67	1
CEMENT KILN	VOC	ng/dscm 7%O2	n-Hexane	25500	25100	40200	14100	20.8	19	1
CEMENT KILN	VOC	ng/dscm 7%O2	o-Xylene	29200	19200	233000	99.9	134	50	1
CEMENT KILN	VOC	ng/dscm 7%O2	Styrene	94100	46600	1050000	46.9	171	61	1
CEMENT KILN	VOC	ng/dscm 7%O2	Tetrachloroethene	3570	906	46000	54.3	240	62	0.912
CEMENT KILN	VOC	ng/dscm 7%O2	Toluene	2640000	186000	80600000	960	423	71	1
CEMENT KILN	VOC	ng/dscm 7%O2	Total Xylene	350000	137000	1630000	85200	136	11	1
CEMENT KILN	VOC	ng/dscm 7%O2	Trichloroethene	67600	1030	670000	244	260	27	0.999
CEMENT KILN	VOC	ng/dscm 7%O2	Vinyl Acetate	463	428	889	181	37.3	19	0.0605
CEMENT KILN	VOC	ng/dscm 7%O2	Vinyl Bromide	2100	1190	7680	334	95	19	0.711
CEMENT KILN	VOC	ng/dscm 7%O2	Vinyl Chloride	15500	10100	131000	120	140	39	0.989
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	4D 2378	0.118	0.0248	1.87	0.000272	228	138	0.505
INCINERATOR	Halogens	ppmv 7%O2	Chlorine	14.8	0.58	201	0.0122	250	154	0.991
INCINERATOR	Halogens	ppmv 7%O2	HCl	45.9	5.58	949	0.0383	264	472	0.996
INCINERATOR	Halogens	ppmv 7%O2	HF	0.278	0.239	0.538	0.063	72.7	9	0
INCINERATOR	Metals	ug/dscm 7%O2	Antimony	2820	7.27	156000	0.12	642	164	0.92
INCINERATOR	Metals	ug/dscm 7%O2	Arsenic	28.3	4.44	1180	0.0787	308	253	0.928
INCINERATOR	Metals	ug/dscm 7%O2	Beryllium	3.55	0.254	57.3	0.00787	264	213	0.292
INCINERATOR	Metals	ug/dscm 7%O2	Cadmium	103	6.89	1890	0.0223	289	256	0.969
INCINERATOR	Metals	ug/dscm 7%O2	Chromium	66.7	25.4	923	0.0943	181	272	0.936
INCINERATOR	Metals	ug/dscm 7%O2	Chromium (Hex)	20.4	3.08	225	0.0306	226	63	0.992
INCINERATOR	Metals	ug/dscm 7%O2	Lead	1320	92.2	53300	0.44	404	241	0.999
INCINERATOR	Metals	ug/dscm 7%O2	Mercury	124	9.51	2400	0.0402	315	177	0.986
INCINERATOR	Metals	ug/dscm 7%O2	Nickel	118	35.3	2050	0.215	239	110	0.961
INCINERATOR	Metals	ug/dscm 7%O2	Selenium	8.64	1.26	46.5	0.309	152	72	0.38
INCINERATOR	PAH	ng/dscm 7%O2	Naphthalene	12000	5440	117000	663	167	43	0.807
INCINERATOR	PCB	ng/dscm 7%O2	PCBs	4650	931	39700	5.13	204	32	0.78
INCINERATOR	SVOC	ng/dscm 7%O2	1,2,4-Trichlorobenzene	4000	4210	17200	354	78.7	56	0.12
INCINERATOR	SVOC	ng/dscm 7%O2	1,4-Dichlorobenzene	4300	4280	17200	263	77.2	31	0.0602
INCINERATOR	SVOC	ng/dscm 7%O2	2,4,5-Trichlorophenol	20700	21300	86100	407	95.7	21	0
INCINERATOR	SVOC	ng/dscm 7%O2	2,4,6-Trichlorophenol	5650	4350	17900	485	95.1	30	0.427
INCINERATOR	SVOC	ng/dscm 7%O2	2,4-Dinitrophenol	30300	25700	86100	20300	55	15	0
INCINERATOR	SVOC	ng/dscm 7%O2	2,4-Dinitrotoluene	42000	4410	230000	1120	199	29	0.00982
INCINERATOR	SVOC	ng/dscm 7%O2	2-Methylphenol (o-Cresol)	62400	24200	351000	1460	151	26	0.974
INCINERATOR	SVOC	ng/dscm 7%O2	3,3-Dichlorobenzidine	10400	9920	34400	203	78.2	25	0
INCINERATOR	SVOC	ng/dscm 7%O2	3-Methylphenol (m-Cresol)	10300	6130	21900	2760	99.5	3	0.801
INCINERATOR	SVOC	ng/dscm 7%O2	4,6-Dinitro-o-Cresol	30300	25700	86100	20300	55	15	0
INCINERATOR	SVOC	ng/dscm 7%O2	4-Methylphenol (p-Cresol)	86700	6440	1820000	407	408	26	0.985
INCINERATOR	SVOC	ng/dscm 7%O2	4-Nitrophenol	27800	24800	86100	3060	63.9	15	0.00734
INCINERATOR	SVOC	ng/dscm 7%O2	Aniline	22.3	22.2	22.7	22.1	1.42	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Aroclor-1016	424	423	428	421	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Aroclor-1221	848	846	857	842	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Aroclor-1232	424	423	428	421	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Aroclor-1242	424	423	428	421	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Aroclor-1248	424	423	428	421	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Aroclor-1254	424	423	428	421	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Aroclor-1260	424	423	428	421	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	bis(2-chloroethyl) Ether	4300	4230	17200	168	82.6	25	0
INCINERATOR	SVOC	ng/dscm 7%O2	bis(2-ethylhexyl) Phthalate	190000	11600	8850000	1830	582	64	0.997
INCINERATOR	SVOC	ng/dscm 7%O2	Bromoform	12000	12000	19300	4670	86.4	2	1
INCINERATOR	SVOC	ng/dscm 7%O2	Dibenzofuran	5670	4960	17200	189	64.5	15	0.00223
INCINERATOR	SVOC	ng/dscm 7%O2	Dichlorvos	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Dimethylphthalate	22900	6640	144000	418	161	29	0.896
INCINERATOR	SVOC	ng/dscm 7%O2	Ethylbenzene	12000	1450	161000	76.9	242	55	0.975
INCINERATOR	SVOC	ng/dscm 7%O2	Heptachlor	21.2	21.2	21.4	21.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Hexachlorobenzene	663000	6000	3330000	946	152	37	0.996
INCINERATOR	SVOC	ng/dscm 7%O2	Hexachlorobutadiene	95200	5480	644000	4080	191	21	0.955
INCINERATOR	SVOC	ng/dscm 7%O2	Hexachlorocyclopentadiene	42500	5460	330000	560	190	28	0.922
INCINERATOR	SVOC	ng/dscm 7%O2	Hexachloroethane	11500	4270	231000	23	300	61	0.721
INCINERATOR	SVOC	ng/dscm 7%O2	Isophorone	6060	5150	17200	4080	54.9	15	0
INCINERATOR	SVOC	ng/dscm 7%O2	Methoxychlor	212	212	214	211	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	N-Nitrosodimethylamine	7270	5480	17200	4960	53.8	9	0
INCINERATOR	SVOC	ng/dscm 7%O2	Nitrobenzene	3800	4250	17200	24.1	104	24	0
INCINERATOR	SVOC	ng/dscm 7%O2	p-Dichlorobenzene	191	160	389	39.1	53.7	12	0.499
INCINERATOR	SVOC	ng/dscm 7%O2	Pentachlorophenol	14900	8810	86100	543	102	45	0
INCINERATOR	SVOC	ng/dscm 7%O2	Phenol	5690	5330	17200	1340	52.8	32	0.226
INCINERATOR	SVOC	ng/dscm 7%O2	Quinoline	4240	4230	4280	4210	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Toxaphene	2120	2120	2140	2110	0.867	3	0
INCINERATOR	VOC	ng/dscm 7%O2	1,1,1-Trichloroethane	50400	3400	743000	7.91	280	91	0.977
INCINERATOR	VOC	ng/dscm 7%O2	1,1,2,2-Tetrachloroethane	985	709	3500	15.9	91.7	52	0.434
INCINERATOR	VOC	ng/dscm 7%O2	1,1,2-Trichloroethane	930	598	4570	7.91	103	53	0.229
INCINERATOR	VOC	ng/dscm 7%O2	1,1-Dichloroethane	6660	1170	143000	3.16	343	53	0.877
INCINERATOR	VOC	ng/dscm 7%O2	1,1-Dichloroethene	12800	1360	156000	3.16	243	59	0.957
INCINERATOR	VOC	ng/dscm 7%O2	1,2-Dichloroethane	5810	2340	37800	23.6	137	78	0.923
INCINERATOR	VOC	ng/dscm 7%O2	1,2-Dichloropropane	21400	893	1040000	77.8	674	52	0.975
INCINERATOR	VOC	ng/dscm 7%O2	1,4-Dioxane	36700	14100	338000	7870	214	17	0.558
INCINERATOR	VOC	ng/dscm 7%O2	Acetonitrile	347000	216000	677000	149000	82.9	3	1
INCINERATOR	VOC	ng/dscm 7%O2	Acrolein	713	714	785	631	6.9	9	0
INCINERATOR	VOC	ng/dscm 7%O2	Acrylonitrile	1040	777	2970	631	58.9	14	0.253

INCINERATOR	VOC	ng/dscm 7%O2	Benzene	21500	6320	690000	57.4	335	126	0.988
INCINERATOR	VOC	ng/dscm 7%O2	Bromoform	106000	7220	1270000	23.6	204	78	0.766
INCINERATOR	VOC	ng/dscm 7%O2	Bromomethane	12900	1690	375000	79.5	429	50	0.366
INCINERATOR	VOC	ng/dscm 7%O2	Carbon disulfide	2830	1300	38300	103	215	44	0.841
INCINERATOR	VOC	ng/dscm 7%O2	Carbon Tetrachloride	120000	22500	1230000	87	169	256	0.915
INCINERATOR	VOC	ng/dscm 7%O2	Chlorobenzene	19700	4910	564000	76.9	313	186	0.77
INCINERATOR	VOC	ng/dscm 7%O2	Chloroethane	2840	1670	22800	39.5	141	53	0.45
INCINERATOR	VOC	ng/dscm 7%O2	Chloroform	165000	30400	2230000	15.8	205	128	0.601
INCINERATOR	VOC	ng/dscm 7%O2	Chloromethane	319000	38000	2990000	1040	219	95	0.617
INCINERATOR	VOC	ng/dscm 7%O2	Cyanide	40200	35100	69200	18400	46.6	8	1
INCINERATOR	VOC	ng/dscm 7%O2	Formaldehyde	431000	420000	684000	219000	33.4	15	1
INCINERATOR	VOC	ng/dscm 7%O2	Iodomethane	713	714	785	631	6.89	9	0
INCINERATOR	VOC	ng/dscm 7%O2	m,p-Xylene	1340	713	6690	119	129	15	0.55
INCINERATOR	VOC	ng/dscm 7%O2	Methyl Ethyl Ketone	34200	9700	266000	214	159	66	0.89
INCINERATOR	VOC	ng/dscm 7%O2	Methylene Chloride	570000	32500	7050000	1190	263	127	0.997
INCINERATOR	VOC	ng/dscm 7%O2	o-Xylene	922	332	5790	76.4	156	15	0.143
INCINERATOR	VOC	ng/dscm 7%O2	Styrene	5030	1280	35900	82	173	48	0.883
INCINERATOR	VOC	ng/dscm 7%O2	Tetrachloroethene	112000	7130	919000	23.7	177	133	0.884
INCINERATOR	VOC	ng/dscm 7%O2	Toluene	37900	4170	1750000	12.1	453	141	0.927
INCINERATOR	VOC	ng/dscm 7%O2	Total Xylene	11700	3850	286000	324	352	50	0.855
INCINERATOR	VOC	ng/dscm 7%O2	Trichloroethene	42900	3380	911000	4.11	313	104	0.978
INCINERATOR	VOC	ng/dscm 7%O2	Vinyl Acetate	1240	726	3820	214	92.8	33	0.13
INCINERATOR	VOC	ng/dscm 7%O2	Vinyl Chloride	29500	4440	304000	21.4	234	61	0.96
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	4D 2378	0.00451	0.00436	0.0054	0.00377	18.3	3	0.323
LWA KILN	Halogens	ppmv 7%O2	Chlorine	3.53	0.599	41	0.0916	239	42	1
LWA KILN	Halogens	ppmv 7%O2	HCl	728	782	2320	0.885	96	42	1
LWA KILN	Metals	ug/dscm 7%O2	Antimony	33.6	7.72	313	1.33	230	42	0.996
LWA KILN	Metals	ug/dscm 7%O2	Arsenic	10	2.2	124	0.23	235	42	0.987
LWA KILN	Metals	ug/dscm 7%O2	Beryllium	0.923	0.246	4.38	0.0574	128	42	0.331
LWA KILN	Metals	ug/dscm 7%O2	Cadmium	28.6	5.74	402	0.288	232	42	1
LWA KILN	Metals	ug/dscm 7%O2	Chromium	56.8	25	739	3.63	213	42	0.883
LWA KILN	Metals	ug/dscm 7%O2	Chromium (Hex)	2.37	1.86	9.62	0.131	100	42	0.64
LWA KILN	Metals	ug/dscm 7%O2	Lead	244	3.91	1770	0.577	189	42	0.97
LWA KILN	Metals	ug/dscm 7%O2	Mercury	183	19.9	760	0.0618	129	42	0.99
LWA KILN	Metals	ug/dscm 7%O2	Nickel	81.4	50.6	497	3.05	149	15	0.995
LWA KILN	Metals	ug/dscm 7%O2	Selenium	1.59	0.484	9.75	0.00541	191	15	0.78
LWA KILN	PAH	ng/dscm 7%O2	Naphthalene	90800	116000	145000	10700	78.1	3	1
LWA KILN	SVOC	ng/dscm 7%O2	1,2,4-Trichlorobenzene	5450	5690	5750	4910	8.53	3	1
LWA KILN	SVOC	ng/dscm 7%O2	1,4-Dichlorobenzene	4650	4730	4750	4480	3.15	3	1
LWA KILN	SVOC	ng/dscm 7%O2	2,4,5-Trichlorophenol	9860	9910	12600	7020	28.5	3	1
LWA KILN	SVOC	ng/dscm 7%O2	2,4,6-Trichlorophenol	8930	8970	11500	6360	28.6	3	1
LWA KILN	SVOC	ng/dscm 7%O2	2,4-Dinitrophenol	3150	3160	4030	2240	28.5	3	1
LWA KILN	SVOC	ng/dscm 7%O2	2,4-Dinitrotoluene	7150	7190	9180	5090	28.5	3	1
LWA KILN	SVOC	ng/dscm 7%O2	2-Methylphenol (o-Cresol)	6570	6670	6700	6330	3.11	3	1
LWA KILN	SVOC	ng/dscm 7%O2	3,3-Dichlorobenzidine	3720	3680	4470	3010	19.7	3	1
LWA KILN	SVOC	ng/dscm 7%O2	4,6-Dinitro-o-Cresol	13400	15100	15400	9870	23	3	1
LWA KILN	SVOC	ng/dscm 7%O2	4-Nitrophenol	24900	25000	31900	17700	28.5	3	1
LWA KILN	SVOC	ng/dscm 7%O2	bis(2-chloroethyl) Ether	6300	6400	6430	6070	3.15	3	1
LWA KILN	SVOC	ng/dscm 7%O2	bis(2-ethylhexyl) Phthalate	16000	17900	22500	7590	47.8	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Dibenzofuran	1870	1880	2410	1340	28.5	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Dimethylphthalate	2440	2450	3130	1740	28.5	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Ethylbenzene	2210	2210	2470	1950	11.7	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Hexachlorobenzene	6120	6860	6990	4500	22.9	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Hexachlororobutadiene	10200	10600	10900	9140	9.02	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Hexachlorocyclopentadiene	12300	12400	15800	8750	28.5	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Hexachloroethane	10700	10900	11000	10400	3.07	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Isophorone	25100	30900	41600	2870	79.6	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Nitrobenzene	5910	6130	6300	5310	8.99	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Pentachlorophenol	14000	15700	16000	10300	23	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Phenol	10200	9440	16200	5120	54.4	3	1
LWA KILN	VOC	ng/dscm 7%O2	1,1,1-Trichloroethane	4170	374	49400	180	301	15	0.866
LWA KILN	VOC	ng/dscm 7%O2	1,1,2,2-Tetrachloroethane	404	487	545	180	48.5	3	1
LWA KILN	VOC	ng/dscm 7%O2	1,1,2-Trichloroethane	359	360	362	353	1.31	3	1
LWA KILN	VOC	ng/dscm 7%O2	1,1-Dichloroethane	179	180	181	177	1.31	3	1
LWA KILN	VOC	ng/dscm 7%O2	1,1-Dichloroethene	479	494	635	309	34.1	3	1
LWA KILN	VOC	ng/dscm 7%O2	1,2-Dichloroethane	179	180	181	177	1.31	3	1
LWA KILN	VOC	ng/dscm 7%O2	1,2-Dichloropropane	179	180	181	177	1.31	3	1
LWA KILN	VOC	ng/dscm 7%O2	Benzene	242000	240000	257000	229000	5.8	3	1
LWA KILN	VOC	ng/dscm 7%O2	Bromoform	373	362	398	360	5.67	3	1
LWA KILN	VOC	ng/dscm 7%O2	Carbon disulfide	12000	11900	13900	10300	14.9	3	1
LWA KILN	VOC	ng/dscm 7%O2	Carbon Tetrachloride	5700	2870	17700	213	110	15	0.939
LWA KILN	VOC	ng/dscm 7%O2	Chlorobenzene	15500	13700	33400	4640	51.3	15	1
LWA KILN	VOC	ng/dscm 7%O2	Chloroethane	508	530	545	449	10.1	3	1
LWA KILN	VOC	ng/dscm 7%O2	Chloroform	179	180	181	177	1.31	3	1
LWA KILN	VOC	ng/dscm 7%O2	Chloromethane	568	575	585	545	3.65	3	1
LWA KILN	VOC	ng/dscm 7%O2	m,p-Xylene	8950	8810	10300	7730	14.4	3	1
LWA KILN	VOC	ng/dscm 7%O2	Methyl Ethyl Ketone	6470	6260	7780	5350	19	3	1
LWA KILN	VOC	ng/dscm 7%O2	Methylene Chloride	51900	41300	88500	25900	62.9	3	1
LWA KILN	VOC	ng/dscm 7%O2	o-Xylene	3560	3890	3900	2880	16.5	3	1
LWA KILN	VOC	ng/dscm 7%O2	Styrene	1240	1320	1320	1080	11.2	3	1
LWA KILN	VOC	ng/dscm 7%O2	Tetrachloroethene	14100	13800	26400	772	60.1	15	1

LWA KILN	VOC	ng/dscm 7%O2	Toluene	55200	36900	104000	24100	78.3	3	1
LWA KILN	VOC	ng/dscm 7%O2	Trichloroethene	179	180	181	177	1.31	3	1
LWA KILN	VOC	ng/dscm 7%O2	Vinyl Acetate	179	180	181	177	1.31	3	1
LWA KILN	VOC	ng/dscm 7%O2	Vinyl Chloride	418	408	442	405	4.97	3	1

\*Relative standard deviation - 100\*Standard Deviation/Mean

\*\*Detect ratio - Ratio of sum of detected runs to nondetected and detected runs.

TABLE 2. OTHER EMISSIONS FROM HAZARDOUS WASTE COMBUSTION.

System Type	Category	Unit	Substance	Mean	Median	Maximum	Minimum	Rel. Std. Deviation, %*	Runs	Detect Ratio**
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	4D Total	42.4	2.09	386	0.0145	191	113	1
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	4F 2378	5.1	0.555	46.8	0.00069	225	119	1
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	4F Total	96.2	8.13	1120	0.00573	247	112	1
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	5D 12378	0.862	0.056	9.53	0.000115	229	120	0.993
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	5D Total	53.7	2.8	453	0.0112	189	113	1
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	5F 12378	2.2	0.139	37.7	0.000267	289	119	0.94
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	5F 23478	4.58	0.329	69.4	0.00206	286	121	0.963
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	5F Total	37.3	2.04	566	0.0103	290	112	1
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	6D 123478	1.05	0.0611	11	0.000344	213	121	0.997
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	6D 123678	1.26	0.0879	12	0.00164	190	122	0.996
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	6D 123789	2.43	0.11	70.2	0.00023	312	121	0.998
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	6D Total	82.2	7.31	576	0.0211	177	113	1
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	6F 123478	3.5	0.189	52	0.00103	272	119	0.944
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	6F 123678	1.38	0.0919	20.5	0.000932	266	119	0.951
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	6F 123789	0.253	0.0225	3.38	0.000267	230	119	0.822
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	6F 234678	2.53	0.161	33.2	0.000156	241	119	0.959
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	6F Total	19.5	0.85	460	0.00407	305	112	1
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	7D 1234678	4.69	0.59	39.7	0.0119	176	122	1
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	7D Total	13.2	1.36	152	0.012	205	113	1
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	7F 1234678	1.31	0.105	20.5	0.00212	253	120	0.995
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	7F 1234789	0.349	0.0316	6.75	0.000458	256	120	0.955
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	7F Total	3.48	0.164	117	0.00313	372	111	0.993
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	8D	2.65	0.815	109	0.0266	380	122	0.997
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	8F	0.367	0.0449	7.9	0.00181	274	120	0.909
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	TEQ	4.59	0.325	62.3	0.00307	255	137	1
CEMENT KILN	Dioxin & Furam	ng/dscm 7%O2	Total PCDD/PCDF	341	34.8	3200	0.579	184	126	1
CEMENT KILN	Metals	ug/dscm 7%O2	Barium	1460	50.3	122000	4.29	836	99	0.937
CEMENT KILN	Metals	ug/dscm 7%O2	Silver	14	3.83	211	0.24	239	96	0.14
CEMENT KILN	Metals	ug/dscm 7%O2	Thallium	38.6	6.47	506	0.351	228	111	0.125
CEMENT KILN	PAH	ng/dscm 7%O2	Acenaphthene	10800	657	57100	114	175	36	0.985
CEMENT KILN	PAH	ng/dscm 7%O2	Acenaphthylene	65800	13800	705000	214	200	71	1
CEMENT KILN	PAH	ng/dscm 7%O2	Anthracene	20500	1690	167000	16	206	52	0.998
CEMENT KILN	PAH	ng/dscm 7%O2	Benz(a)anthracene	8250	265	72200	0.52	226	37	0.99
CEMENT KILN	PAH	ng/dscm 7%O2	Benz(a)pyrene	5980	338	34300	47.9	172	32	0.912
CEMENT KILN	PAH	ng/dscm 7%O2	Benz(b)fluoranthene	7360	798	58100	42	207	36	0.994
CEMENT KILN	PAH	ng/dscm 7%O2	Benz(e)pyrene	41.3	42.8	43.8	35.9	8.91	4	0
CEMENT KILN	PAH	ng/dscm 7%O2	Benz(g,h,i)perylene	3210	226	22800	59.9	190	29	0.663
CEMENT KILN	PAH	ng/dscm 7%O2	Benz(k)fluoranthene	846	193	10900	42	271	23	0.172
CEMENT KILN	PAH	ng/dscm 7%O2	Chrysene	21000	1450	145000	59.9	182	45	0.997
CEMENT KILN	PAH	ng/dscm 7%O2	Dibenz(a,h)anthracene	1780	265	22400	65.8	258	25	0.296
CEMENT KILN	PAH	ng/dscm 7%O2	Fluoranthene	31200	9980	245000	272	159	64	1
CEMENT KILN	PAH	ng/dscm 7%O2	Fluorene	35100	3060	400000	193	260	59	1
CEMENT KILN	PAH	ng/dscm 7%O2	Indeno(1,2,3-cd)pyrene	2160	378	17400	65.8	181	31	0.634
CEMENT KILN	PAH	ng/dscm 7%O2	Phenanthrene	79200	28800	853000	1490	194	75	0.999
CEMENT KILN	PAH	ng/dscm 7%O2	Pyrene	15900	6640	136000	2.55	153	62	1
CEMENT KILN	Particulate	gr/dscf 7%O2	Particulate	0.0318	0.0222	0.49	0.000475	129	193	1
CEMENT KILN	SVOC	ng/dscm 7%O2	1,2,3,4-Tetrachlorobenzene	890	878	962	843	5.69	4	0
CEMENT KILN	SVOC	ng/dscm 7%O2	1,2,3,5-Tetrachlorobenzene	1040	1030	1140	955	7.37	4	0
CEMENT KILN	SVOC	ng/dscm 7%O2	1,2,3-Trichlorobenzene	920	912	1010	850	7.13	4	0
CEMENT KILN	SVOC	ng/dscm 7%O2	1,2,4,5-Tetrachlorobenzene	875	837	1190	650	22.4	10	0
CEMENT KILN	SVOC	ng/dscm 7%O2	1,2-Dichlorobenzene	3280	1730	10100	339	96.3	22	0.88
CEMENT KILN	SVOC	ng/dscm 7%O2	1,3,5-Trichlorobenzene	881	875	962	813	7.14	4	0
CEMENT KILN	SVOC	ng/dscm 7%O2	1,3-Dichlorobenzene	2490	1150	11600	185	139	27	0.783
CEMENT KILN	SVOC	ng/dscm 7%O2	1,4-Naphthquinone	1760	1760	1870	1650	8.75	2	1
CEMENT KILN	SVOC	ng/dscm 7%O2	1-Chloronaphthalene	1180	1180	1220	1140	4.76	2	1
CEMENT KILN	SVOC	ng/dscm 7%O2	2,2-Oxybis(1-chloropropane)	1590	1440	2840	502	36	18	0.153
CEMENT KILN	SVOC	ng/dscm 7%O2	2,3,4,5-Tetrachlorophenol	1190	1170	1290	1130	5.73	4	0
CEMENT KILN	SVOC	ng/dscm 7%O2	2,3,4,6-Tetrachlorophenol	5190	2430	51000	1560	221	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	2,3,4-Trichlorophenol	1140	1120	1230	1080	5.55	4	0
CEMENT KILN	SVOC	ng/dscm 7%O2	2,3,5,6-Tetrachlorophenol	1430	1410	1540	1350	5.64	4	0
CEMENT KILN	SVOC	ng/dscm 7%O2	2,3,5-Trichlorophenol	1160	1150	1250	1100	5.6	4	0
CEMENT KILN	SVOC	ng/dscm 7%O2	2,3,6-Trichlorophenol	1140	1120	1230	1080	5.83	4	0
CEMENT KILN	SVOC	ng/dscm 7%O2	2,3-Dichlorophenol	1340	1320	1460	1240	6.96	4	0
CEMENT KILN	SVOC	ng/dscm 7%O2	2,4-Dichlorophenol	2770	1290	13100	145	115	31	0.403
CEMENT KILN	SVOC	ng/dscm 7%O2	2,4-Dimethylphenol	21700	1370	128000	158	187	24	0.964
CEMENT KILN	SVOC	ng/dscm 7%O2	2,5-Dichlorophenol	925	917	1010	855	7.18	4	0
CEMENT KILN	SVOC	ng/dscm 7%O2	2,6-Dichlorophenol	1250	1140	1900	811	25.8	22	0.268
CEMENT KILN	SVOC	ng/dscm 7%O2	2,6-Dinitrotoluene	1770	1690	2730	417	31.1	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	2-Chloronaphthalene	1300	642	5390	35	120	29	0.972
CEMENT KILN	SVOC	ng/dscm 7%O2	2-Chlorophenol	5170	3480	39300	666	116	64	0.851
CEMENT KILN	SVOC	ng/dscm 7%O2	2-Methylnaphthalene	111000	24400	1280000	5920	200	72	0.989
CEMENT KILN	SVOC	ng/dscm 7%O2	2-Nitroaniline	2110	2230	3060	607	27.5	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	2-Nitrophenol	9940	2530	47200	198	139	20	0.941
CEMENT KILN	SVOC	ng/dscm 7%O2	3,4-Chlorophenol	1010	1000	1100	938	6.95	4	0
CEMENT KILN	SVOC	ng/dscm 7%O2	3,4-Dichlorophenol	907	894	980	863	5.59	4	0

TABLE 2. OTHER EMISSIONS FROM HAZARDOUS WASTE COMBUSTION.

System Type	Category	Unit	Substance	Mean	Median	Maximum	Minimum	Rel. Std. Deviation, %*	Runs	Detect Ratio**
CEMENT KILN	SVOC	ng/dscm 7%O2	3,4-Methylphenol	15700	8090	131000	839	179	21	0.923
CEMENT KILN	SVOC	ng/dscm 7%O2	3,5-Dichlorophenol	819	806	888	775	5.93	4	0
CEMENT KILN	SVOC	ng/dscm 7%O2	3-Nitroaniline	1330	1420	1750	444	25.9	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	4-Bromophenyl-phenylether	1510	1370	2470	246	36.2	18	0
CEMENT KILN	SVOC	ng/dscm 7%O2	4-Chloro-3-methylphenol	1210	1190	1910	194	30.9	18	0.171
CEMENT KILN	SVOC	ng/dscm 7%O2	4-Chloroaniline	806	820	1200	110	29.8	18	0.172
CEMENT KILN	SVOC	ng/dscm 7%O2	4-Chlorophenyl-phenylether	961	913	1490	180	33.1	18	0.0642
CEMENT KILN	SVOC	ng/dscm 7%O2	4-Methyl-2-pentanone	4140	821	59700	393	317	20	0.803
CEMENT KILN	SVOC	ng/dscm 7%O2	4-Nitroaniline	1140	1180	1540	418	26.5	18	0.0548
CEMENT KILN	SVOC	ng/dscm 7%O2	Benzoinic acid	367000	212000	4440000	3740	174	49	1
CEMENT KILN	SVOC	ng/dscm 7%O2	Benzyl alcohol	72200	7360	649000	1200	204	54	0.997
CEMENT KILN	SVOC	ng/dscm 7%O2	bis(2-chloroethoxy) Methane	1110	1120	1790	150	33	18	0.175
CEMENT KILN	SVOC	ng/dscm 7%O2	Butylbenzylphthalate	8580	793	45500	132	158	38	0.998
CEMENT KILN	SVOC	ng/dscm 7%O2	Carbazole	18300	7520	57800	221	119	12	1
CEMENT KILN	SVOC	ng/dscm 7%O2	di-n-Butyl Phthalate	10500	6920	81800	939	125	47	0.998
CEMENT KILN	SVOC	ng/dscm 7%O2	di-n-Octyl Phthalate	488	142	5250	35.9	219	25	0.321
CEMENT KILN	SVOC	ng/dscm 7%O2	Diethylphthalate	2980	1280	21500	97	152	28	0.978
CEMENT KILN	SVOC	ng/dscm 7%O2	Diphenylamine	1740	1740	1740	0	1	1	
CEMENT KILN	SVOC	ng/dscm 7%O2	N-Nitroso-di-n-propylamine	2510	2300	4460	907	34.6	18	0.14
CEMENT KILN	SVOC	ng/dscm 7%O2	N-Nitrosodiphenylamine	11800	631	221000	132	387	23	0.961
CEMENT KILN	SVOC	ng/dscm 7%O2	Pentachlorobenzene	2380	1220	23400	754	198	22	0
CEMENT KILN	SVOC	ng/dscm 7%O2	Perylene	95	98	100	84	7.88	4	0
CEMENT KILN	SVOC	ng/dscm 7%O2	Pyridine	33600	8240	119000	56.2	115	42	0.964
CEMENT KILN	SVOC	ng/dscm 7%O2	Sulfur Hexafluoride	428	401	699	197	57.1	6	0.243
CEMENT KILN	THC & CO	ppmv 7%O2	CO	584	363	5190	7.9	116	198	1
CEMENT KILN	THC & CO	ppmv 7%O2	CO(MHRA)	723	625	3510	11.1	94.1	110	1
CEMENT KILN	THC & CO	ppmv 7%O2	THC	26.5	15.7	99	2.6	84.2	164	1
CEMENT KILN	THC & CO	ppmv 7%O2	THC(MHRA)	28.8	19	101	4.67	91.1	88	1
CEMENT KILN	VOC	ng/dscm 7%O2	1,4-Dichloro-2-butene	3080	2740	9010	1390	59	19	0
CEMENT KILN	VOC	ng/dscm 7%O2	2-Hexanone	8820	1480	132000	665	322	21	0.842
CEMENT KILN	VOC	ng/dscm 7%O2	2-Picoline	13600	7510	49200	1170	107	18	0.863
CEMENT KILN	VOC	ng/dscm 7%O2	Acetone	6310000	105000	152000000	842	445	63	1
CEMENT KILN	VOC	ng/dscm 7%O2	Bromodichloromethane	1900	1790	8190	150	87.9	27	0.953
CEMENT KILN	VOC	ng/dscm 7%O2	Bromoethane	14800	6660	93500	197	143	44	0.979
CEMENT KILN	VOC	ng/dscm 7%O2	cis-1,2-Dichloroethene	737	727	1610	189	43.9	19	0
CEMENT KILN	VOC	ng/dscm 7%O2	cis-1,3-Dichloropropene	457	440	871	173	33.6	19	0.456
CEMENT KILN	VOC	ng/dscm 7%O2	Dibromochloromethane	1020	763	4810	25.3	94.6	25	0.674
CEMENT KILN	VOC	ng/dscm 7%O2	Dibromomethane	1060	1010	2520	287	53.1	19	0.14
CEMENT KILN	VOC	ng/dscm 7%O2	Isooctane	16500	274	307000	165	427	19	0.00666
CEMENT KILN	VOC	ng/dscm 7%O2	t-1,2-Dichloroethane	107	83.3	249	37.1	76.2	5	1
CEMENT KILN	VOC	ng/dscm 7%O2	t-Butyl Methyl Ether	340	361	464	173	24.5	11	0.0973
CEMENT KILN	VOC	ng/dscm 7%O2	Total TIC	1080000	957000	1580000	849000	24.9	6	1
CEMENT KILN	VOC	ng/dscm 7%O2	trans-1,3-Dichloropropene	1810	524	10200	181	160	25	0.809
CEMENT KILN	VOC	ng/dscm 7%O2	Trichlorofluoromethane	9650	4790	69900	1.84	159	27	1
CEMENT KILN	VOC	ng/dscm 7%O2	Trichlorotrifluoromethane	1740	1760	1790	1670	3.62	3	0
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	4D Total	1.61	0.317	31.1	0.00122	218	144	0.915
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	4F 2378	4.17	0.164	200	0.00165	465	144	0.995
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	4F Total	31.5	1.97	644	0.00316	223	144	0.997
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	5D 12378	0.171	0.0318	5.36	0.000961	324	121	0.953
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	5D Total	2.09	0.291	50.9	0.00202	283	140	0.962
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	5F 12378	1.69	0.0665	32.4	0.001	264	121	0.998
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	5F 23478	3.56	0.133	106	0.001	378	121	0.999
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	5F 2378	0.0959	0.0945	0.131	0.0726	25.7	5	1
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	5F Total	27.3	1.79	464	0.00301	234	140	0.999
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	6D 123478	0.209	0.0422	6.29	0.00157	322	107	0.96
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	6D 123478/678	0.00264	0.00191	0.00522	0.00151	66.5	4	0.852
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	6D 123678	0.3	0.0386	7.37	0.00142	280	111	0.977
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	6D 123789	0.387	0.0398	10.2	0.0011	304	111	0.986
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	6D 2378	0.0614	0.047	0.146	0.0199	73	10	0.533
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	6D Total	3.28	0.323	74.9	0.00202	281	140	0.968
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	6F 123478	5.9	0.447	68	0.00142	215	112	1
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	6F 123478/678	0.00867	0.00865	0.013	0.00438	45	4	1
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	6F 123678	2.14	0.242	18.8	0.000948	191	112	0.999
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	6F 123789	0.224	0.0424	3.55	0.000848	209	116	0.976
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	6F 234678	2.44	0.225	30.3	0.00113	229	116	0.999
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	6F 2378	0.0916	0.0623	0.233	0.0148	93.1	10	0.905
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	6F Total	18.6	1.76	226	0.00162	209	140	0.998
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	7D 1234678	1.35	0.118	24.3	0.00217	255	126	0.996
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	7D Total	2.69	0.348	47.2	0.0034	255	139	0.96
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	7F 1234678	7.75	0.867	85.2	0.0013	211	116	0.999
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	7F 1234789	1.24	0.105	19.2	0.00113	231	116	0.997
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	7F 2378	0.146	0.0692	0.554	0.0197	117	10	0.916
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	7F Total	11.8	1.57	155	0.00202	225	140	0.998
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	8D	1.98	0.443	37.5	0.0097	223	144	0.925
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	8F	5.7	0.622	84.7	0.00217	254	142	0.994
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	TEQ	3.14	0.247	76.5	0.00473	311	141	1

TABLE 2. OTHER EMISSIONS FROM HAZARDOUS WASTE COMBUSTION.

System Type	Category	Unit	Substance	Mean	Median	Maximum	Minimum	Rel. Std. Deviation, %*	Runs	Detect Ratio**
INCINERATOR	Dioxin & Furan	ng/dscm 7%O2	Total PCDD/PCDF	102	23.2	1230	0.063	192	152	1
INCINERATOR	Halogens	ppmv 7%O2	HBr	34.9	29.1	94.9	2.26	78.4	19	1
INCINERATOR	Halogens	ppmv 7%O2	HI	1.95	2.11	2.98	0.000682	44.5	10	1
INCINERATOR	Metals	ug/dscm 7%O2	Barium	86.3	29.7	1050	0.268	177	155	0.801
INCINERATOR	Metals	ug/dscm 7%O2	Silver	33.2	2.47	1320	0.0154	533	137	0.822
INCINERATOR	Metals	ug/dscm 7%O2	Thallium	15.6	5.15	361	0.134	263	130	0.057
INCINERATOR	PAH	ng/dscm 7%O2	Acenaphthene	5150	4680	17200	530	71.2	18	0
INCINERATOR	PAH	ng/dscm 7%O2	Acenaphthylene	5130	4680	17200	398	72.2	18	0
INCINERATOR	PAH	ng/dscm 7%O2	Anthracene	4900	4620	17200	265	79	18	0.0132
INCINERATOR	PAH	ng/dscm 7%O2	Benz(a)anthracene	5130	4680	17200	398	72.2	18	0
INCINERATOR	PAH	ng/dscm 7%O2	Benzo(a)pyrene	6100	5260	17200	4080	50	18	0
INCINERATOR	PAH	ng/dscm 7%O2	Benzo(b)fluoranthene	5700	4810	17200	3310	55	18	0.043
INCINERATOR	PAH	ng/dscm 7%O2	Benzo(g,h,i)perylene	5390	4680	17200	1720	63	18	0
INCINERATOR	PAH	ng/dscm 7%O2	Benzo(k)fluoranthene	6100	5260	17200	4080	50	18	0
INCINERATOR	PAH	ng/dscm 7%O2	Chrysene	6060	5150	17200	4080	54.9	15	0
INCINERATOR	PAH	ng/dscm 7%O2	Dibenz(a,h)anthracene	5650	4680	17200	3050	56.1	18	0
INCINERATOR	PAH	ng/dscm 7%O2	Fluoranthene	4150	4270	17200	326	86.1	23	0.0614
INCINERATOR	PAH	ng/dscm 7%O2	Fluorene	5360	4680	17200	1590	63.8	18	0
INCINERATOR	PAH	ng/dscm 7%O2	Indeno(1,2,3-cd)pyrene	6600	5330	17200	4080	50.2	18	0
INCINERATOR	PAH	ng/dscm 7%O2	Phenanthrene	5330	4280	17200	546	84.5	26	0.321
INCINERATOR	PAH	ng/dscm 7%O2	Pyrene	4070	4230	17200	272	84.2	23	0.092
INCINERATOR	Particulate	gr/dscf 7%O2	Particulate	0.0327	0.0135	5.59	0.00000313	683	632	1
INCINERATOR	SVOC	ng/dscm 7%O2	1,2,3,5-Tetrachlorobenzene	653	667	827	459	25.9	6	0
INCINERATOR	SVOC	ng/dscm 7%O2	1,2,3-Trichlorobenzene	666	662	722	616	6.63	4	0
INCINERATOR	SVOC	ng/dscm 7%O2	1,2-Dichlorobenzene	5880	4150	71100	283	194	58	0.446
INCINERATOR	SVOC	ng/dscm 7%O2	1,3-Dichlorobenzene	4330	4280	17200	278	76	31	0.0668
INCINERATOR	SVOC	ng/dscm 7%O2	1-Phenylethanone	5250	5030	9840	1090	70	4	1
INCINERATOR	SVOC	ng/dscm 7%O2	2,4,6-Trinitrotoluene	111000	116000	230000	1120	90.9	13	0.23
INCINERATOR	SVOC	ng/dscm 7%O2	2,4-Dichlorophenol	3860	4210	17200	378	91.5	27	0.0266
INCINERATOR	SVOC	ng/dscm 7%O2	2,4-Dimethylphenol	6060	5150	17200	4080	54.9	15	0
INCINERATOR	SVOC	ng/dscm 7%O2	2,6-Dinitrotoluene	48200	5150	230000	1120	184	25	0
INCINERATOR	SVOC	ng/dscm 7%O2	2-Chloronaphthalene	7630	5220	28900	933	91.2	25	0.503
INCINERATOR	SVOC	ng/dscm 7%O2	2-Chlorophenol	4020	4230	17200	272	90.2	25	0
INCINERATOR	SVOC	ng/dscm 7%O2	2-Methylnaphthalene	5510	5180	17200	571	64.4	18	0.0401
INCINERATOR	SVOC	ng/dscm 7%O2	2-Nitroaniline	30300	25700	86100	20300	55	15	0
INCINERATOR	SVOC	ng/dscm 7%O2	2-Nitrophenol	6060	5150	17200	4080	54.9	15	0
INCINERATOR	SVOC	ng/dscm 7%O2	3-Nitroaniline	30300	25700	86100	20300	55	15	0
INCINERATOR	SVOC	ng/dscm 7%O2	4,4'-DDD	42.4	42.3	42.8	42.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	4,4'-DDE	42.4	42.3	42.8	42.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	4,4'-DDT	42.4	42.3	42.8	42.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	4,4-Dichlorobiphenyl	4240	4230	4280	4210	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	4-Bromophenyl-phenylether	22000000	5150	329000000	4080	387	15	0
INCINERATOR	SVOC	ng/dscm 7%O2	4-Chloro-3-methylphenol	3860	4230	17200	38.6	97.2	25	0
INCINERATOR	SVOC	ng/dscm 7%O2	4-Chloroaniline	4400	4280	17200	200	88	21	0
INCINERATOR	SVOC	ng/dscm 7%O2	4-Chlorophenyl-phenylether	4030	4230	17200	274	90	25	0
INCINERATOR	SVOC	ng/dscm 7%O2	4-Methyl-2-pentanone	5390	1290	64100	214	223	28	0.493
INCINERATOR	SVOC	ng/dscm 7%O2	4-Nitroaniline	30300	25700	86100	20300	55	15	0
INCINERATOR	SVOC	ng/dscm 7%O2	Aldrin	21.2	21.2	21.4	21.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Alpha-BHC	21.2	21.2	21.4	21.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Alpha-chlordane	21.2	21.2	21.4	21.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Atrazine	424	423	428	421	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Azinphos-methyl	212	212	214	211	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Benzaldehyde	4520	4740	4910	3920	11.7	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Benzoic acid	102000	102000	299000	512	85.7	45	0.979
INCINERATOR	SVOC	ng/dscm 7%O2	Benzonitrile	2900	2210	5510	1640	61.6	4	1
INCINERATOR	SVOC	ng/dscm 7%O2	Benzyl alcohol	251000	83300	1500000	922	143	26	0.995
INCINERATOR	SVOC	ng/dscm 7%O2	Beta-BHC	21.2	21.2	21.4	21.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	bis(2-chloroethoxy) Methane	4300	4230	17200	176	82.6	25	0
INCINERATOR	SVOC	ng/dscm 7%O2	bis(2-chloroisopropyl) Ether	4290	4230	17200	150	82.9	25	0
INCINERATOR	SVOC	ng/dscm 7%O2	Bolstar	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Butylbenzylphthalate	3240	1680	17200	529	126	25	0.677
INCINERATOR	SVOC	ng/dscm 7%O2	Carbazole	4240	4230	4280	4210	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Chlorodibromomethane	89200	78700	450000	1230	112	26	1
INCINERATOR	SVOC	ng/dscm 7%O2	Chlorotoluene	4520	4740	4910	3920	11.7	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Chlorpyrifos	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Coumaphos	424	423	428	421	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Decalin	83300	104000	136000	9870	78.7	3	1
INCINERATOR	SVOC	ng/dscm 7%O2	Delta-BHC	21.2	21.2	21.4	21.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Demeton, O	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Demeton, S	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	di-n-Butyl Phthalate	7360	5810	31000	770	79.4	37	0.778
INCINERATOR	SVOC	ng/dscm 7%O2	di-n-Octyl Phthalate	18200	4830	165000	284	233	28	0.924
INCINERATOR	SVOC	ng/dscm 7%O2	Dichlorobenzene	8850	8880	12000	6490	17.7	9	1
INCINERATOR	SVOC	ng/dscm 7%O2	Dieldrin	42.4	42.3	42.8	42.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Diethylphthalate	44000	5230	925000	485	363	36	0.97
INCINERATOR	SVOC	ng/dscm 7%O2	Dinitrocresol	215	215	239	196	7.43	6	0

TABLE 2. OTHER EMISSIONS FROM HAZARDOUS WASTE COMBUSTION.

System Type	Category	Unit	Substance	Mean	Median	Maximum	Minimum	Rel. Std. Deviation, %*	Runs	Detect Ratio**
INCINERATOR	SVOC	ng/dscm 7%O2	Dinitrophenol	397	393	432	369	5.99	6	0
INCINERATOR	SVOC	ng/dscm 7%O2	Disulfoton	59.6	84.6	85.7	8.42	74.4	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Endosulfan I	21.2	21.2	21.4	21.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Endosulfan II	42.4	42.3	42.8	42.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Endosulfan sulfate	42.4	42.3	42.8	42.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Endrin	42.4	42.3	42.8	42.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Endrin ketone	42.4	42.3	42.8	42.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Ethyl methacrylate	713	714	785	631	6.89	9	0
INCINERATOR	SVOC	ng/dscm 7%O2	Ethyl parathion	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Fensulfothion	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Fenthion	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Formic acid	9830000	6830000	17900000	4770000	71.8	3	1
INCINERATOR	SVOC	ng/dscm 7%O2	Gamma-BHC	21.2	21.2	21.4	21.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Gamma-chlordane	21.2	21.2	21.4	21.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Heptachlor epoxide	34.4	21.2	61	21.1	67	3	0.591
INCINERATOR	SVOC	ng/dscm 7%O2	Isodrin	42.4	42.3	42.8	42.1	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Malathion	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Morphos	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Methyl Parathion	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Mevinphos	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	N-Nitroso-di-n-propylamine	6060	5150	17200	4080	54.9	15	0
INCINERATOR	SVOC	ng/dscm 7%O2	N-Nitrosodiphenylamine	4250	4250	4410	4080	2.54	6	0
INCINERATOR	SVOC	ng/dscm 7%O2	Naled	212	212	214	211	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Nitroglycerine	17200	8580	74000	1660	122	11	0.858
INCINERATOR	SVOC	ng/dscm 7%O2	p-Benzozquinone	67300	3190	1670000	2310	486	26	0
INCINERATOR	SVOC	ng/dscm 7%O2	PBX-0280	44100	43900	45500	43100	2.72	3	1
INCINERATOR	SVOC	ng/dscm 7%O2	Pentachlorobenzene	4240	4230	4280	4210	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Phenylenediamine	90.6	88.2	97.2	86.3	6.44	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Phorate	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	RDX (CYCLONITE)	268000	143000	552000	109000	92	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Ronnel	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Stirophos	212	212	214	211	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Supona	212	212	214	211	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Tetrachlorobenzene	5200	5440	7580	2330	43.9	4	1
INCINERATOR	SVOC	ng/dscm 7%O2	Tokuthion	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Trichlorobenzene	633	496	1030	253	52.3	12	0.744
INCINERATOR	SVOC	ng/dscm 7%O2	Trichloronate	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	SVOC	ng/dscm 7%O2	Trinitrotoluene	44000000	19200000	245000000	839000	177	9	1
INCINERATOR	SVOC	ng/dscm 7%O2	VX-Nerve Agent	153	154	159	147	2.9	5	0
INCINERATOR	THC & CO	ppmv 7%O2	CO	523	11.2	11700	0.0753	371	489	0.999
INCINERATOR	THC & CO	ppmv 7%O2	CO(MHRA)	240	18.4	2630	0.789	221	63	1
INCINERATOR	THC & CO	ppmv 7%O2	THC	8.39	2.3	385	0.09	458	206	0.994
INCINERATOR	THC & CO	ppmv 7%O2	THC(MHRA)	14	4.2	71.9	1.3	134	27	1
INCINERATOR	VOC	ng/dscm 7%O2	1,1,1-Dichlorofluoroethane	322000	320000	329000	316000	2.12	3	0
INCINERATOR	VOC	ng/dscm 7%O2	1,2,3-Trichloropropane	713	714	785	631	6.89	9	0
INCINERATOR	VOC	ng/dscm 7%O2	1,2-Dichloroethene	5250	128	45500	103	242	14	0.891
INCINERATOR	VOC	ng/dscm 7%O2	1,3-Dimethoxypropane	10100	10100	10100	10100	0	1	1
INCINERATOR	VOC	ng/dscm 7%O2	1,4-Dichloro-2-butane	1650	728	6350	631	120	9	0.707
INCINERATOR	VOC	ng/dscm 7%O2	2-Chloroethyl Vinyl Ether	4700	6760	7850	79.5	72.5	14	0.00121
INCINERATOR	VOC	ng/dscm 7%O2	2-Hexanone	7180	2480	72500	214	198	33	0.717
INCINERATOR	VOC	ng/dscm 7%O2	2-Methyldecalin	6470	6470	6470	6470	0	1	1
INCINERATOR	VOC	ng/dscm 7%O2	Acetone	124000	13200	1100000	214	206	53	0.964
INCINERATOR	VOC	ng/dscm 7%O2	Bromodichloroethane	43200	46300	48600	34800	17	3	1
INCINERATOR	VOC	ng/dscm 7%O2	Bromodichloromethane	75300	6990	1840000	103	302	76	0.8
INCINERATOR	VOC	ng/dscm 7%O2	Bromoethane	4370	3670	9240	2000	64.4	5	0.515
INCINERATOR	VOC	ng/dscm 7%O2	Chlorodifluoromethane	4430	4670	5460	3170	26.2	3	0.41
INCINERATOR	VOC	ng/dscm 7%O2	cis-1,2-Dichloroethene	1940	1160	7680	631	98	12	0
INCINERATOR	VOC	ng/dscm 7%O2	cis-1,3-Dichloropropane	862	875	1320	373	52.9	4	0.338
INCINERATOR	VOC	ng/dscm 7%O2	cis-1,3-Dichloropropene	21400	866	891000	39.8	534	61	0.965
INCINERATOR	VOC	ng/dscm 7%O2	Diazinon	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	VOC	ng/dscm 7%O2	Dibromochloroethane	62300	66800	71200	49000	18.9	3	1
INCINERATOR	VOC	ng/dscm 7%O2	Dibromochloromethane	74400	1750	652000	103	226	59	0.0908
INCINERATOR	VOC	ng/dscm 7%O2	Dibromomethane	5820	5770	7940	1600	36.2	9	1
INCINERATOR	VOC	ng/dscm 7%O2	Dichlorodifluoromethane	2610	1420	6930	631	95.5	11	0.975
INCINERATOR	VOC	ng/dscm 7%O2	Dimethyldisulfide	2310	2340	2360	2220	3.33	3	0
INCINERATOR	VOC	ng/dscm 7%O2	Dinitrotoluene	169000	173000	189000	146000	12.9	3	0
INCINERATOR	VOC	ng/dscm 7%O2	Ethoprop	84.8	84.6	85.7	84.2	0.867	3	0
INCINERATOR	VOC	ng/dscm 7%O2	Freon 22	4520	4740	4910	3920	11.7	3	0
INCINERATOR	VOC	ng/dscm 7%O2	Hexamethylcyclotrisiloxane	3720	2980	6470	1710	66.2	3	1
INCINERATOR	VOC	ng/dscm 7%O2	Iodoethane	59.3	35.4	176	15.7	101	8	0.734
INCINERATOR	VOC	ng/dscm 7%O2	m-Dichlorobenzene	146	155	560	15.6	96.9	13	0.401
INCINERATOR	VOC	ng/dscm 7%O2	Methyldecalin	56500	56500	57400	55700	2.14	2	1
INCINERATOR	VOC	ng/dscm 7%O2	o-Dichlorobenzene	46700	1290	347000	15.4	206	32	0.992
INCINERATOR	VOC	ng/dscm 7%O2	Octamethylcyclotetrasiloxane	2510	2510	2510	2510	0	1	1
INCINERATOR	VOC	ng/dscm 7%O2	Tetrachloroethane	6470	4470	15100	1910	81.5	7	1
INCINERATOR	VOC	ng/dscm 7%O2	trans-1,2-Dichloroethene	7250	1860	77600	7.73	227	36	0.898

TABLE 2. OTHER EMISSIONS FROM HAZARDOUS WASTE COMBUSTION.

System Type	Category	Unit	Substance	Mean	Median	Maximum	Minimum	Rel. Std. Deviation, %*	Runs	Detect Ratio**
INCINERATOR	VOC	ng/dscm 7%O2	trans-1,3-Dichloropropene	1340	1170	1890	1120	27.8	4	0
INCINERATOR	VOC	ng/dscm 7%O2	trans-1,3-Dichloropropene	7650	1060	68800	103	203	51	0.934
INCINERATOR	VOC	ng/dscm 7%O2	Trichlorofluoroethane	3030	2970	3410	2700	9.68	6	0
INCINERATOR	VOC	ng/dscm 7%O2	Trichlorofluoromethane	53900	9430	657000	768	212	93	0.682
INCINERATOR	VOC	ng/dscm 7%O2	Trimethylnaphthalene	6680	6680	6680	6680	0	1	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	4D Total	0.0252	0.0217	0.0326	0.0213	25.5	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	4F 2378	0.0219	0.0206	0.0294	0.0157	31.8	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	4F Total	0.419	0.519	0.53	0.209	43.5	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	5D 12378	0.00924	0.00957	0.0119	0.00624	30.9	3	0.43
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	5D Total	0.0387	0.0218	0.0726	0.0216	76.1	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	5F 12378	0.0242	0.0211	0.0314	0.02	26.1	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	5F 23478	0.022	0.0186	0.0292	0.0182	28.4	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	5F Total	0.192	0.16	0.263	0.152	32.3	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	6D 123478	0.00735	0.00847	0.00943	0.00415	38.3	3	0.572
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	6D 123678	0.0101	0.00818	0.0152	0.00686	44.3	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	6D 123789	0.0148	0.0145	0.0195	0.0105	30.5	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	6D Total	0.0841	0.0925	0.0953	0.0644	20.4	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	6F 123478	0.0443	0.044	0.052	0.0369	17	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	6F 123678	0.0204	0.02	0.0238	0.0174	15.7	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	6F 123789	0.0105	0.0097	0.0138	0.00807	28.1	3	0.745
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	6F 234678	0.0306	0.0328	0.0335	0.0255	14.6	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	6F Total	0.157	0.142	0.196	0.134	21.6	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	7D 1234678	0.0987	0.102	0.113	0.0812	16.3	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	7D Total	0.177	0.18	0.204	0.148	16	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	7F 1234678	0.0669	0.0504	0.1	0.0502	42.9	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	7F 1234789	0.0171	0.0175	0.0181	0.0156	7.5	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	7F Total	0.153	0.0923	0.292	0.0748	78.9	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	8D	0.339	0.272	0.479	0.267	35.7	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	8F	0.0872	0.0804	0.107	0.0741	20.1	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	TEQ	0.0396	0.0356	0.0477	0.0354	17.7	3	1
LWA KILN	Dioxin & Furan	ng/dscm 7%O2	Total PCDD/PCDF	1.67	1.69	1.77	1.57	5.98	3	1
LWA KILN	Metals	ug/dscm 7%O2	Barium	33.3	12.6	277	0.5	163	42	0.716
LWA KILN	Metals	ug/dscm 7%O2	Silver	4.11	0.8	80.6	0.0524	306	42	0.207
LWA KILN	Metals	ug/dscm 7%O2	Thallium	1.44	1.02	6.65	0.241	96.4	42	0.14
LWA KILN	PAH	ng/dscm 7%O2	Acenaphthene	35100	35300	45100	25000	28.5	3	1
LWA KILN	PAH	ng/dscm 7%O2	Acenaphthylene	1810	1820	2330	1290	28.7	3	1
LWA KILN	PAH	ng/dscm 7%O2	Anthracene	1330	1480	1520	977	22.9	3	1
LWA KILN	PAH	ng/dscm 7%O2	Benz(a)anthracene	949	935	1150	763	20.4	3	1
LWA KILN	PAH	ng/dscm 7%O2	Benz(a)pyrene	11500	2470	31200	823	149	3	1
LWA KILN	PAH	ng/dscm 7%O2	Benz(b)fluoranthene	10400	2250	28300	740	149	3	1
LWA KILN	PAH	ng/dscm 7%O2	Benz(g,h,i)perylene	12000	2580	32600	860	149	3	1
LWA KILN	PAH	ng/dscm 7%O2	Benz(k)fluoranthene	11000	2370	29800	787	148	3	1
LWA KILN	PAH	ng/dscm 7%O2	Chrysene	1030	1020	1250	833	20	3	1
LWA KILN	PAH	ng/dscm 7%O2	Dibenz(a,h)anthracene	14200	3090	38300	1030	148	3	1
LWA KILN	PAH	ng/dscm 7%O2	Fluoranthene	1050	1170	1200	777	22.6	3	1
LWA KILN	PAH	ng/dscm 7%O2	Fluorene	2530	2530	3240	1800	28.5	3	1
LWA KILN	PAH	ng/dscm 7%O2	Indeno(1,2,3-cd)pyrene	10900	2330	29500	777	149	3	1
LWA KILN	PAH	ng/dscm 7%O2	Phenanthrene	1340	1510	1530	990	22.8	3	1
LWA KILN	PAH	ng/dscm 7%O2	Pyrene	741	735	890	597	19.8	3	1
LWA KILN	Particulate	gr/dscf 7%O2	Particulate	0.00911	0.00711	0.0371	0.000299	90	48	1
LWA KILN	SVOC	ng/dscm 7%O2	1,2-Dichlorobenzene	5030	5120	5130	4850	3.08	3	1
LWA KILN	SVOC	ng/dscm 7%O2	1,3-Dichlorobenzene	4800	4880	4900	4630	3.14	3	1
LWA KILN	SVOC	ng/dscm 7%O2	2,2-Oxybis(1-chloropropane)	6170	6260	6290	5950	3.05	3	1
LWA KILN	SVOC	ng/dscm 7%O2	2,4-Dichlorophenol	7090	7350	7560	6370	8.95	3	1
LWA KILN	SVOC	ng/dscm 7%O2	2,4-Dimethylphenol	6170	6390	6580	5530	9.01	3	1
LWA KILN	SVOC	ng/dscm 7%O2	2,6-Dinitrotoluene	10600	10700	13600	7570	28.6	3	1
LWA KILN	SVOC	ng/dscm 7%O2	2-Chloronaphthalene	3040	3030	3870	2210	27.3	3	1
LWA KILN	SVOC	ng/dscm 7%O2	2-Chlorophenol	5330	5410	5440	5140	3.13	3	1
LWA KILN	SVOC	ng/dscm 7%O2	2-Methylnaphthalene	2970	3080	3170	2670	9	3	1
LWA KILN	SVOC	ng/dscm 7%O2	2-Nitroaniline	12900	13000	16600	9210	28.5	3	1
LWA KILN	SVOC	ng/dscm 7%O2	2-Nitrophenol	9400	9740	10000	8440	8.96	3	1
LWA KILN	SVOC	ng/dscm 7%O2	3,4-Methylphenol	6320	6430	6440	6090	3.11	3	1
LWA KILN	SVOC	ng/dscm 7%O2	3-Nitroaniline	10800	10800	13800	7680	28.5	3	1
LWA KILN	SVOC	ng/dscm 7%O2	4-Bromophenyl-phenylether	8110	9100	9270	5960	23	3	1
LWA KILN	SVOC	ng/dscm 7%O2	4-Chloro-3-methylphenol	8020	8310	8550	7190	9.04	3	1
LWA KILN	SVOC	ng/dscm 7%O2	4-Chloroaniline	4760	4940	5070	4270	9.04	3	1
LWA KILN	SVOC	ng/dscm 7%O2	4-Chlorophenol	5760	5790	7400	4100	28.6	3	0.665
LWA KILN	SVOC	ng/dscm 7%O2	4-Methyl-2-pentanone	588	588	726	449	33.3	2	1
LWA KILN	SVOC	ng/dscm 7%O2	4-Nitroaniline	8830	8870	11300	6300	28.5	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Benzoic acid	1170000	1200000	1270000	1050000	9.83	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Benzyl alcohol	13400	13600	13600	12900	3.12	3	1
LWA KILN	SVOC	ng/dscm 7%O2	bis(2-chloroethoxy) Methane	4960	5140	5280	4450	8.95	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Butylbenzylphthalate	1710	1420	2540	1170	42.6	3	1
LWA KILN	SVOC	ng/dscm 7%O2	di-n-Butyl Phthalate	56400	45200	81200	42800	38.1	3	1
LWA KILN	SVOC	ng/dscm 7%O2	di-n-Octyl Phthalate	5350	1150	14500	380	149	3	1
LWA KILN	SVOC	ng/dscm 7%O2	Diethylphthalate	9500	10100	11500	6850	25.3	3	1

TABLE 2. OTHER EMISSIONS FROM HAZARDOUS WASTE COMBUSTION.

System Type	Category	Unit	Substance	Mean	Median	Maximum	Minimum	Rel. Std. Deviation, %*	Runs	Detect Ratio**
LWA KILN	SVOC	ng/dscm 7%O <sub>2</sub>	N-Nitroso-di-n-propylamine	12300	12500	12500	11800	3.1	3	1
LWA KILN	SVOC	ng/dscm 7%O <sub>2</sub>	N-Nitrosodiphenylamine	3310	3720	3790	2430	23	3	1
LWA KILN	THC & CO	ppmv 7%O <sub>2</sub>	CO	169	48.3	1050	37.3	178	18	1
LWA KILN	THC & CO	ppmv 7%O <sub>2</sub>	CO(MHRA)	1290	1340	1900	628	49.6	3	1
LWA KILN	THC & CO	ppmv 7%O <sub>2</sub>	THC	9.43	9.6	10.8	7.9	15.4	3	1
LWA KILN	THC & CO	ppmv 7%O <sub>2</sub>	THC(MHRA)	12.8	12.5	13.4	12.4	4.31	3	1
LWA KILN	VOC	ng/dscm 7%O <sub>2</sub>	2-Hexanone	295000	862	885000	810	173	3	1
LWA KILN	VOC	ng/dscm 7%O <sub>2</sub>	Acetone	52700	66300	74100	17600	58.1	3	1
LWA KILN	VOC	ng/dscm 7%O <sub>2</sub>	Bromodichloromethane	179	180	181	177	1.31	3	1
LWA KILN	VOC	ng/dscm 7%O <sub>2</sub>	Bromoethane	478	530	545	360	21.5	3	1
LWA KILN	VOC	ng/dscm 7%O <sub>2</sub>	cis-1,2-Dichloroethene	194	181	221	180	12.1	3	1
LWA KILN	VOC	ng/dscm 7%O <sub>2</sub>	cis-1,3-Dichloropropene	179	180	181	177	1.31	3	1
LWA KILN	VOC	ng/dscm 7%O <sub>2</sub>	Dibromochloromethane	194	181	221	180	12.1	3	1
LWA KILN	VOC	ng/dscm 7%O <sub>2</sub>	trans-1,2-Dichloroethene	239	227	309	180	27.3	3	1
LWA KILN	VOC	ng/dscm 7%O <sub>2</sub>	trans-1,3-Dichloropropene	194	181	221	180	12.1	3	1
LWA KILN	VOC	ng/dscm 7%O <sub>2</sub>	Trichlorofluoromethane	19700	20100	21400	17500	10	3	1

\*Relative standard deviation - 100\*Standard Deviation/Mean

\*\*Detect ratio - Ratio of sum of detected runs to nondetected and detected runs.

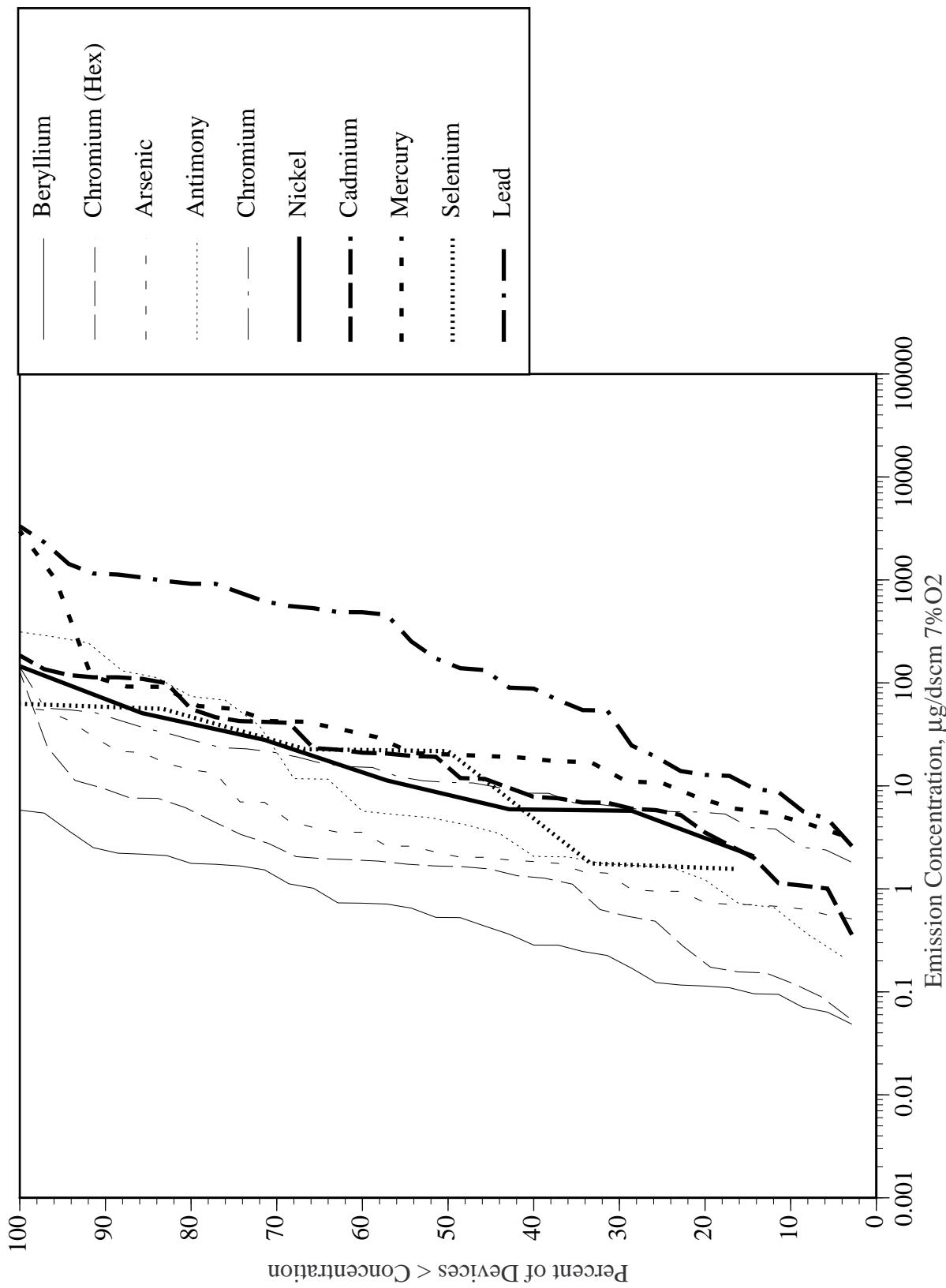


Figure 1a. CAAA metals emission concentration distributions for cement kilns.

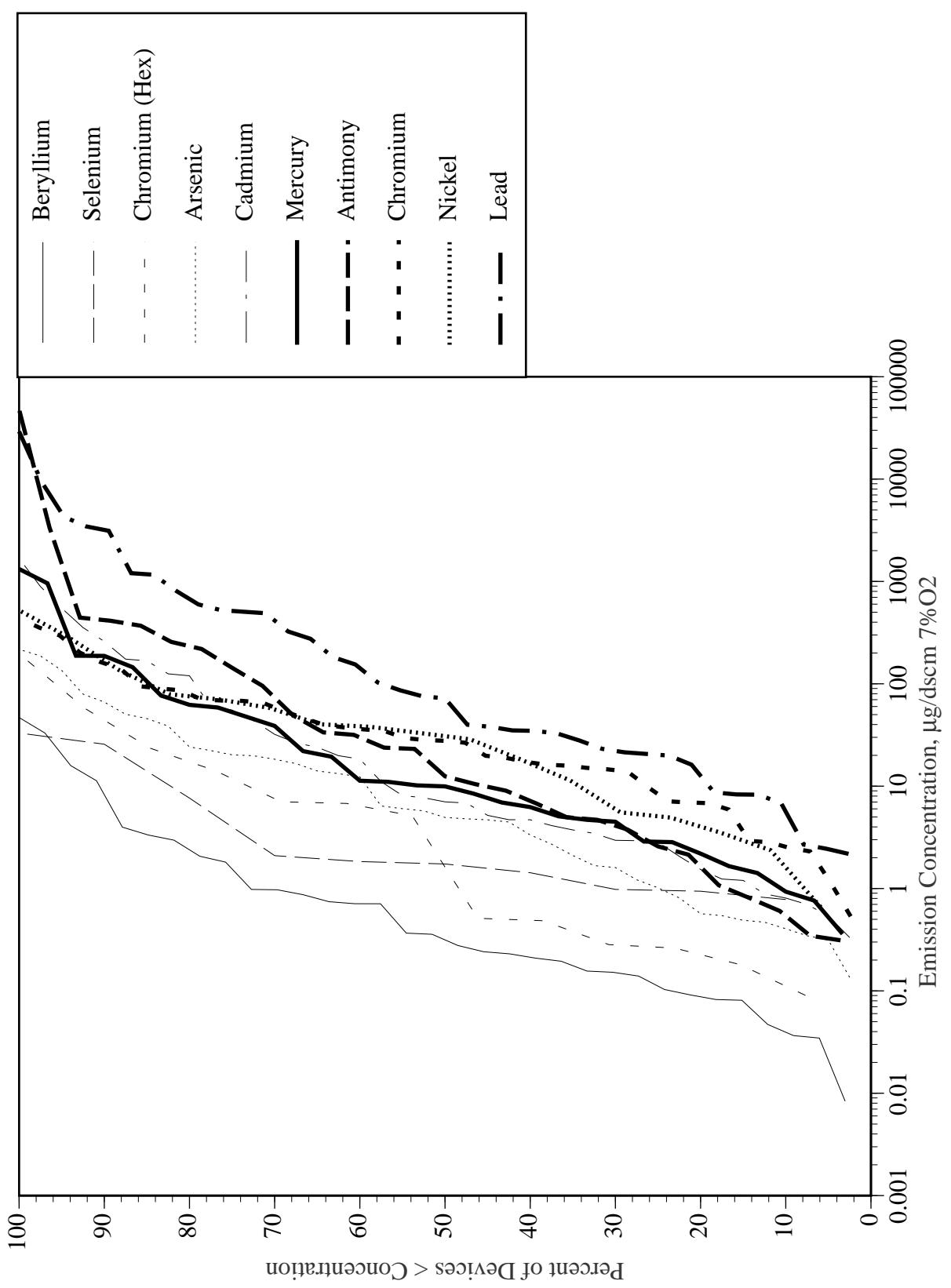


Figure 1b. CAAA metals emission concentration distributions for incinerators.

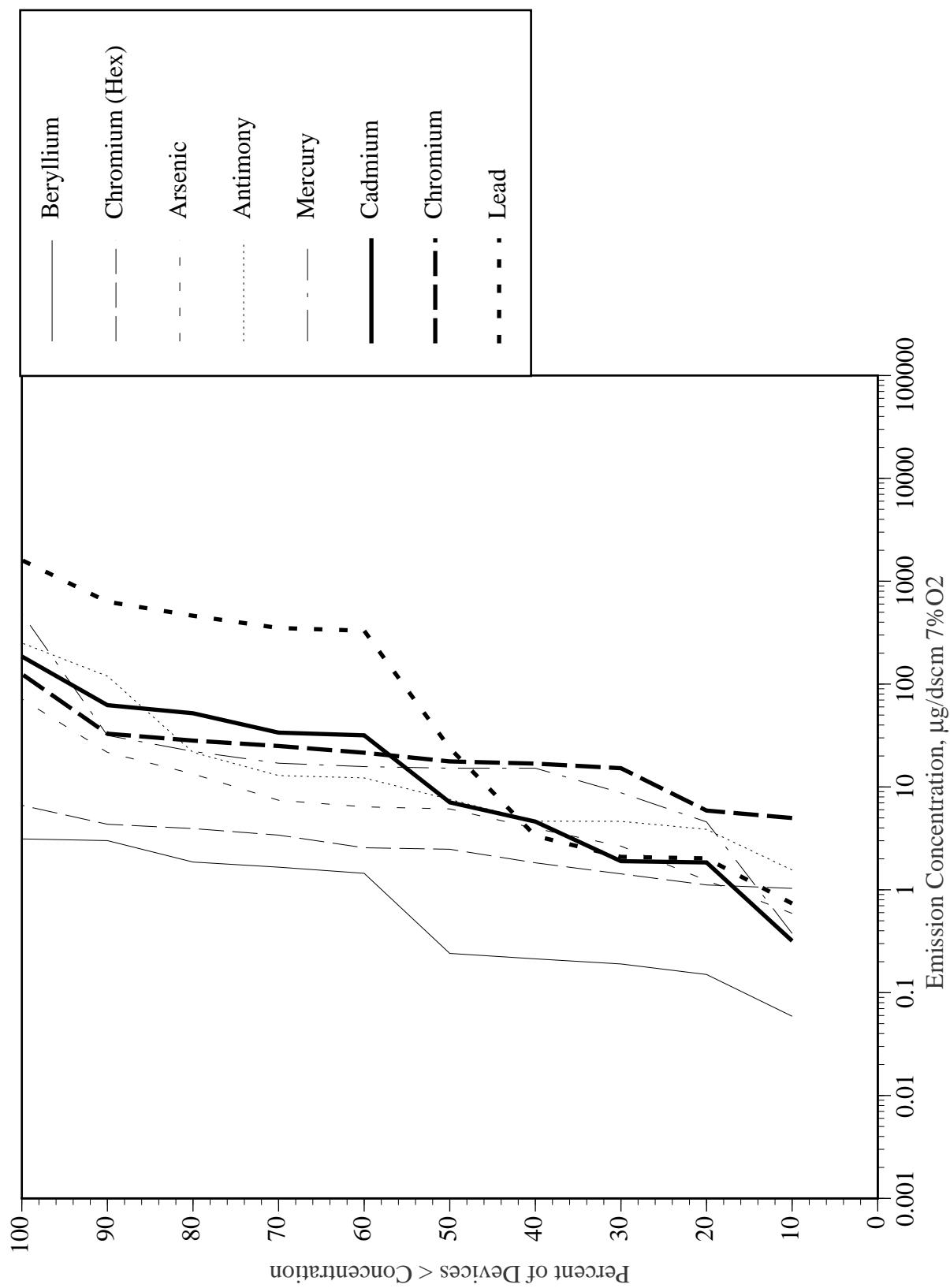


Figure 1c. CAAA metals emission concentration distributions for LWA kilns.

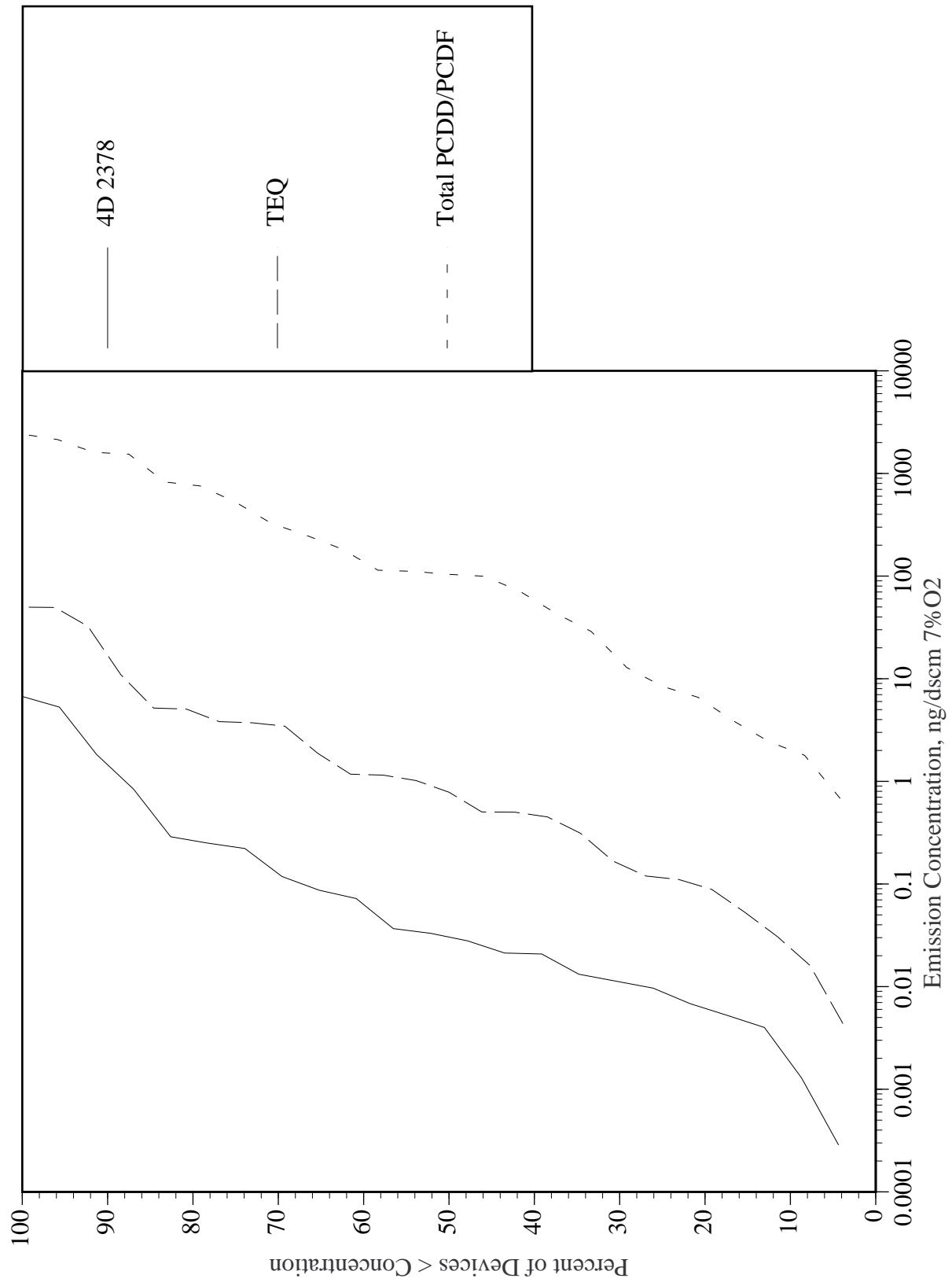


Figure 2a. Selected dioxin and furan emission concentration distributions for cement kilns.

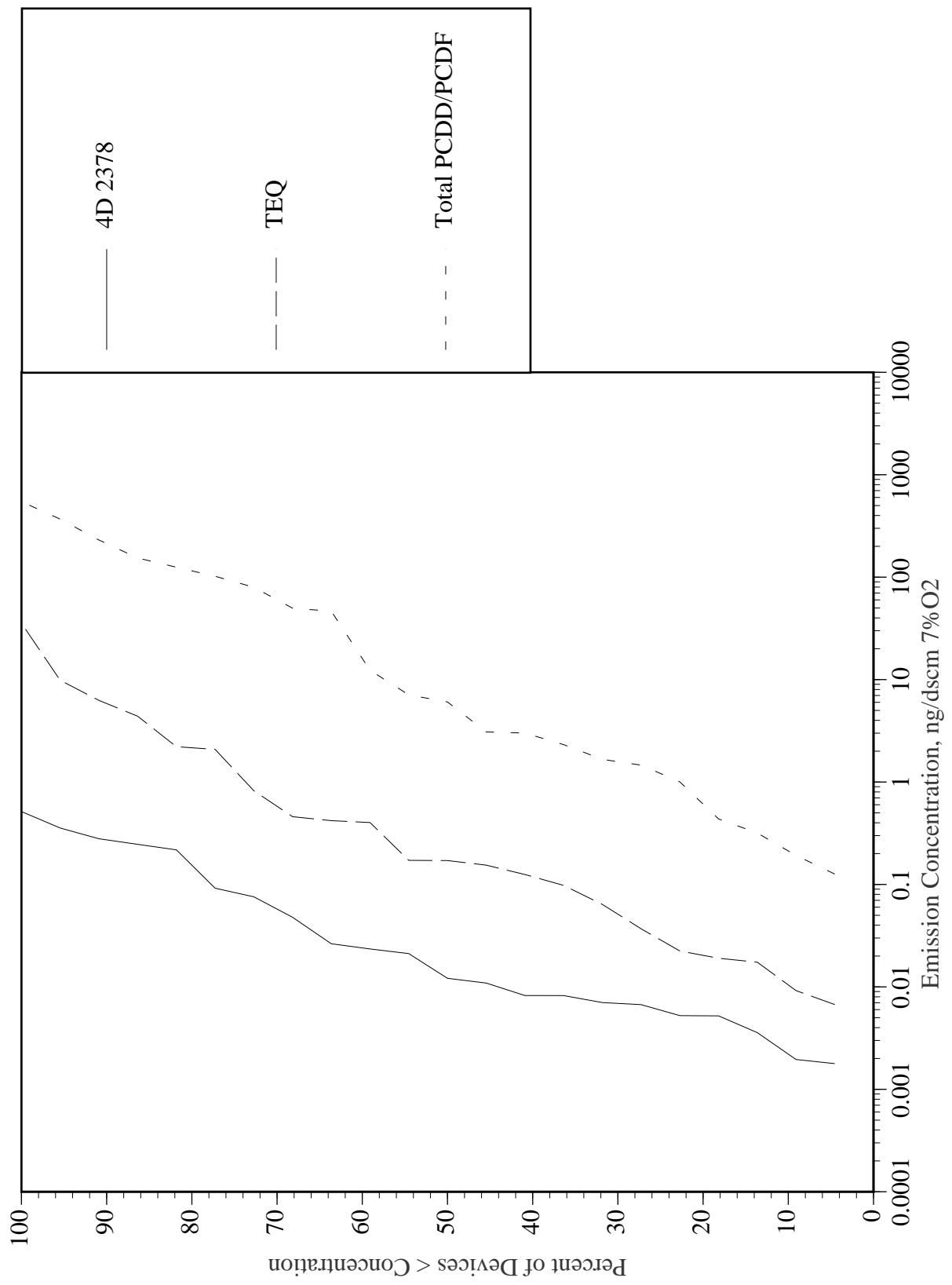


Figure 2b. Selected dioxin and furan emission concentration distributions for incinerators.

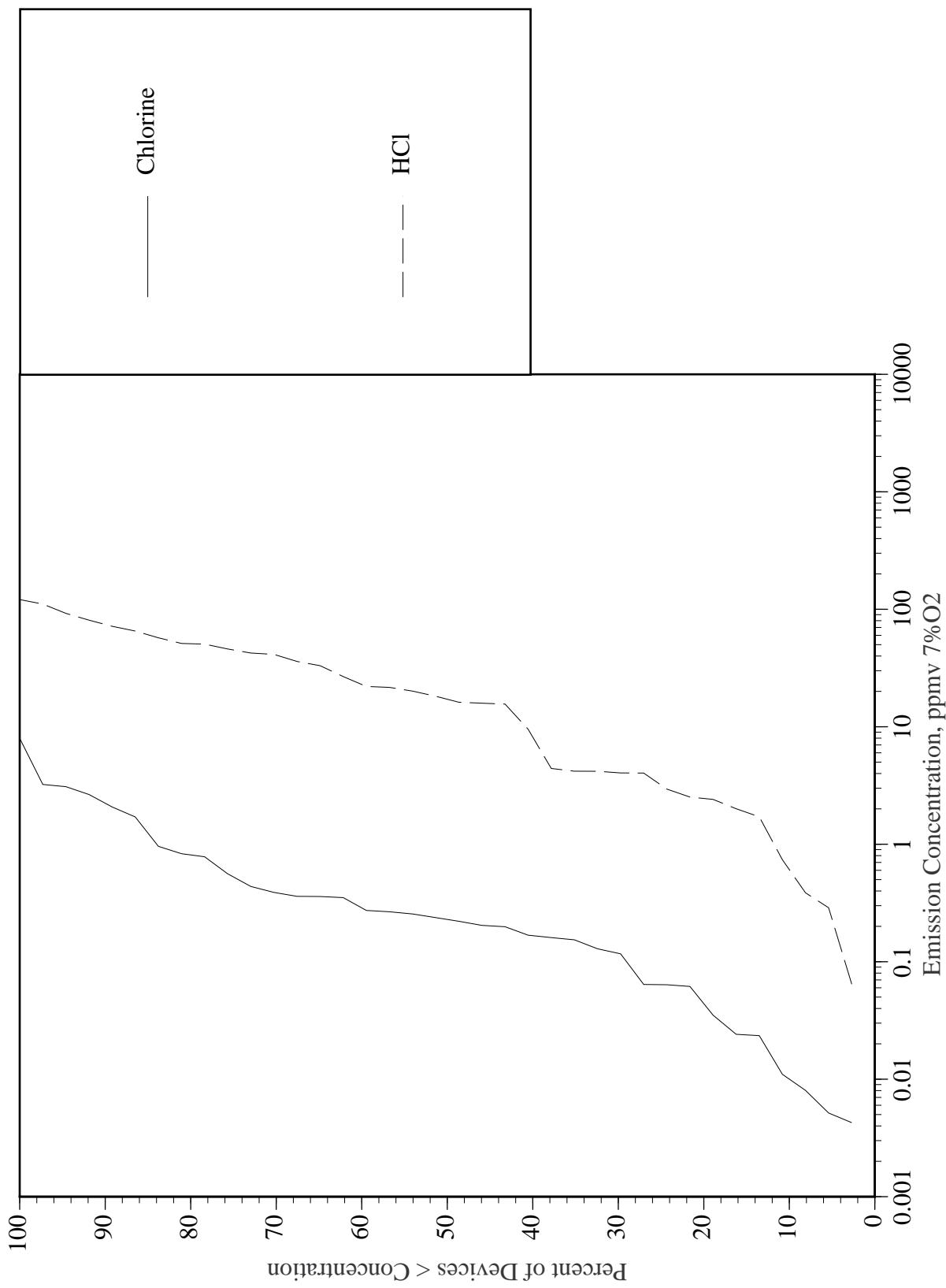


Figure 3a. Chlorine and hydrogen chloride emission concentration distributions for cement kilns.

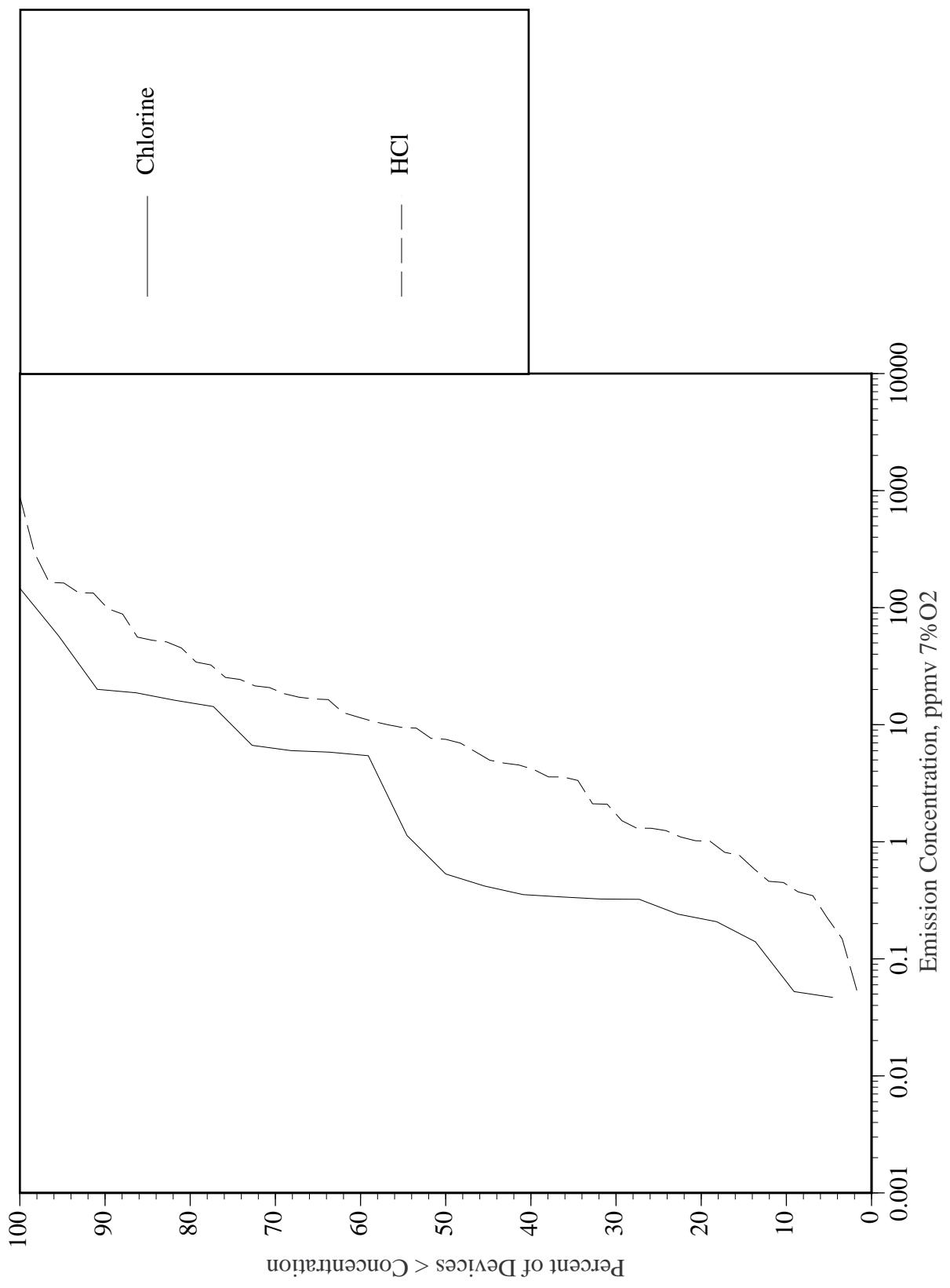


Figure 3b. Chlorine and hydrogen chloride emission concentration distributions for incinerators.

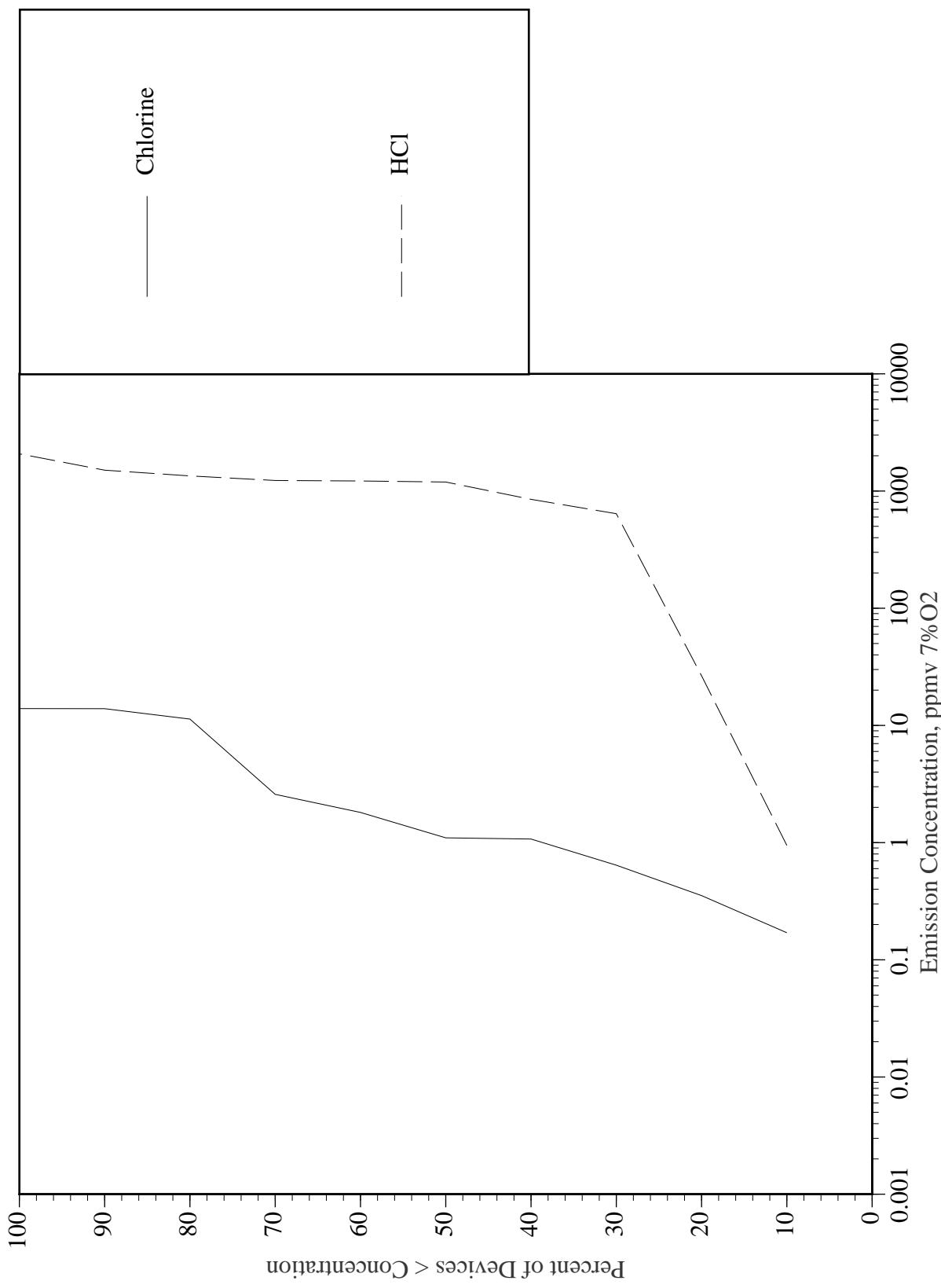


Figure 3c. Chlorine and hydrogen chloride emission concentration distributions for LWA kilns.

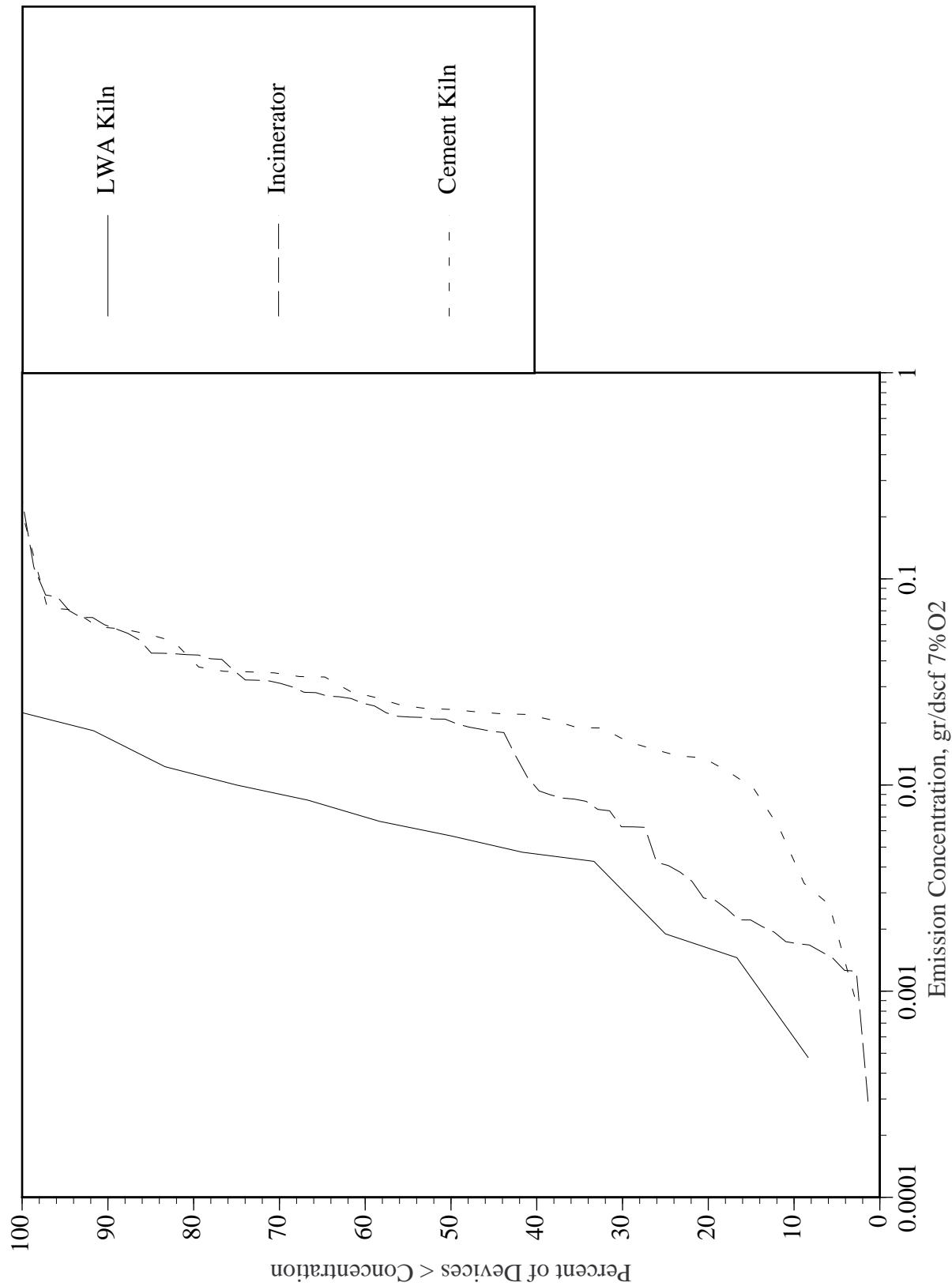


Figure 4. Total particulate emission concentration distributions for hazardous waste combustors.

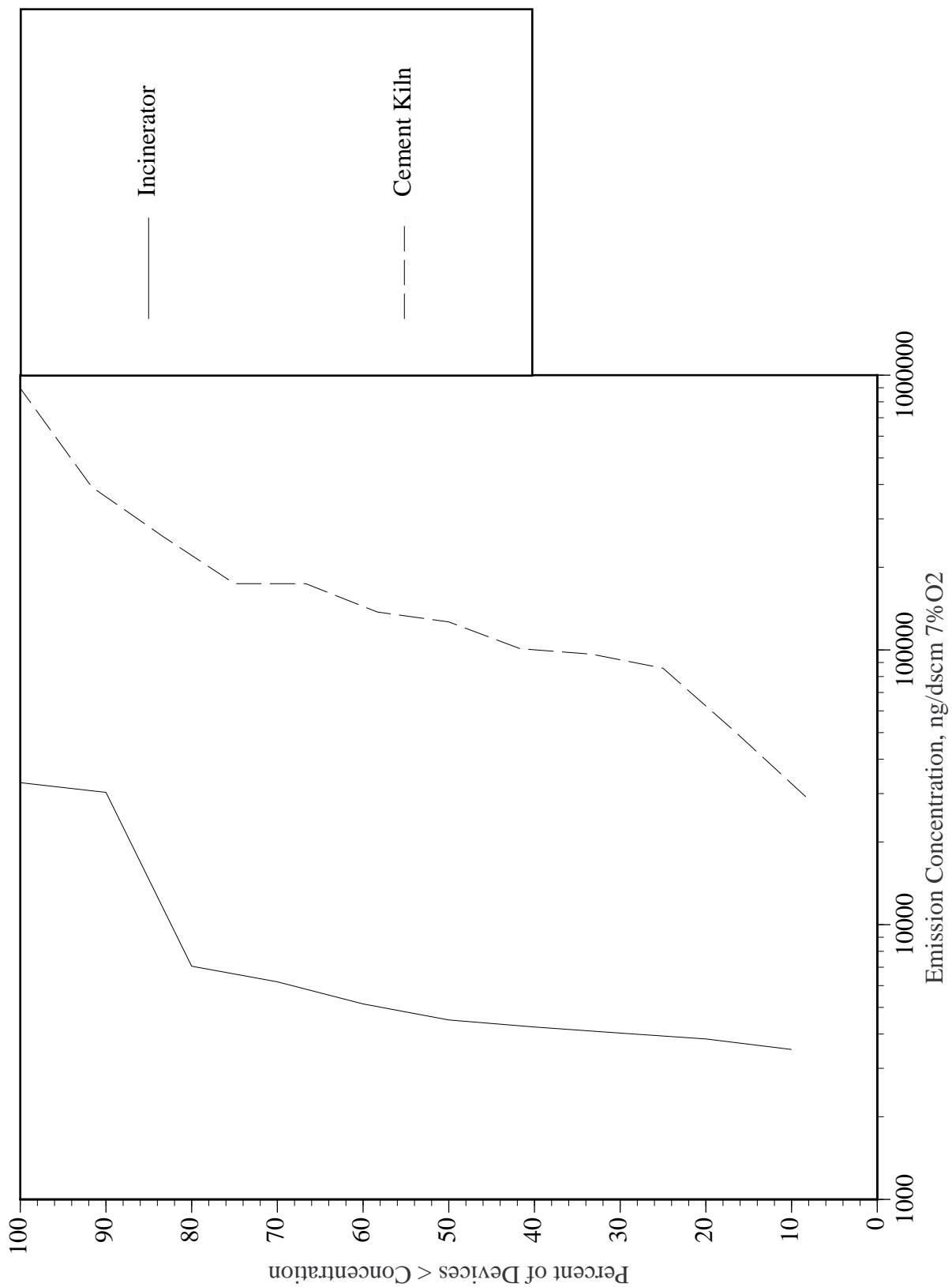


Figure 5. Naphthalene emission concentration distributions for hazardous waste combustion.

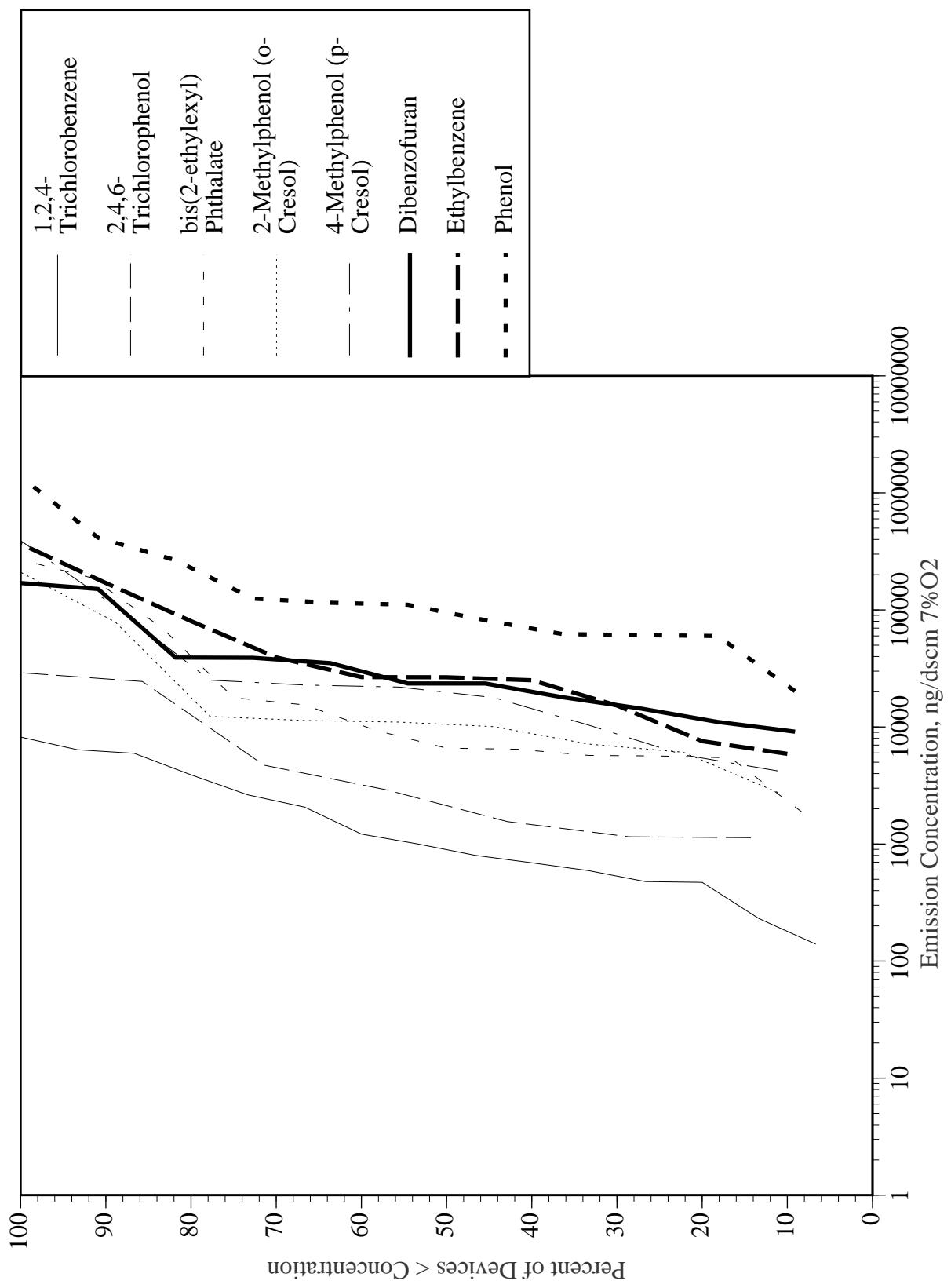


Figure 6a. CAAA semi-volatile organic emission concentration distributions for cement kilns.

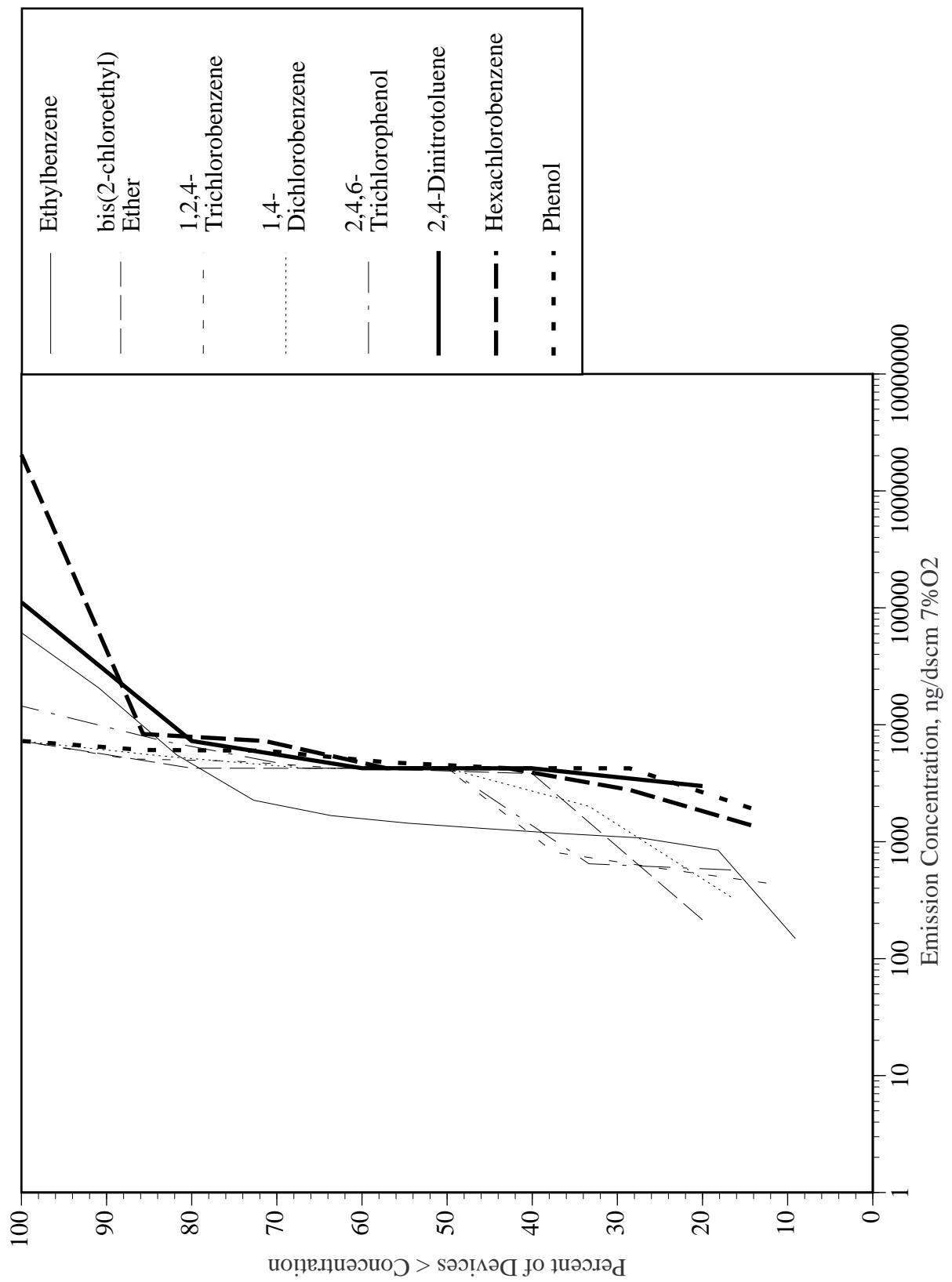


Figure 6b. CAAA semi-volatile organic emission concentration distributions for incinerators.

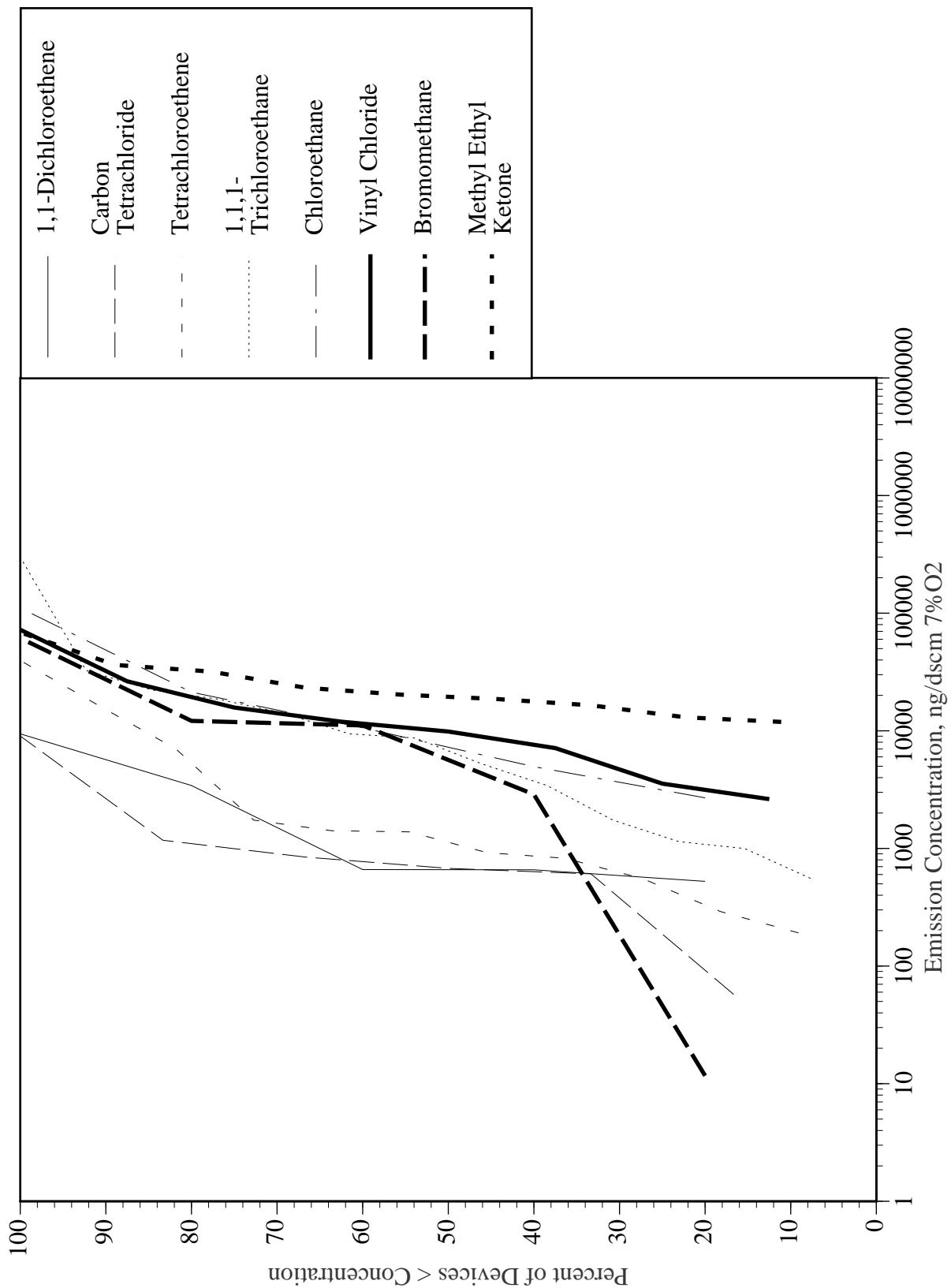


Figure 7a. CAAA volatile organic emission concentration distributions for cement kilns.

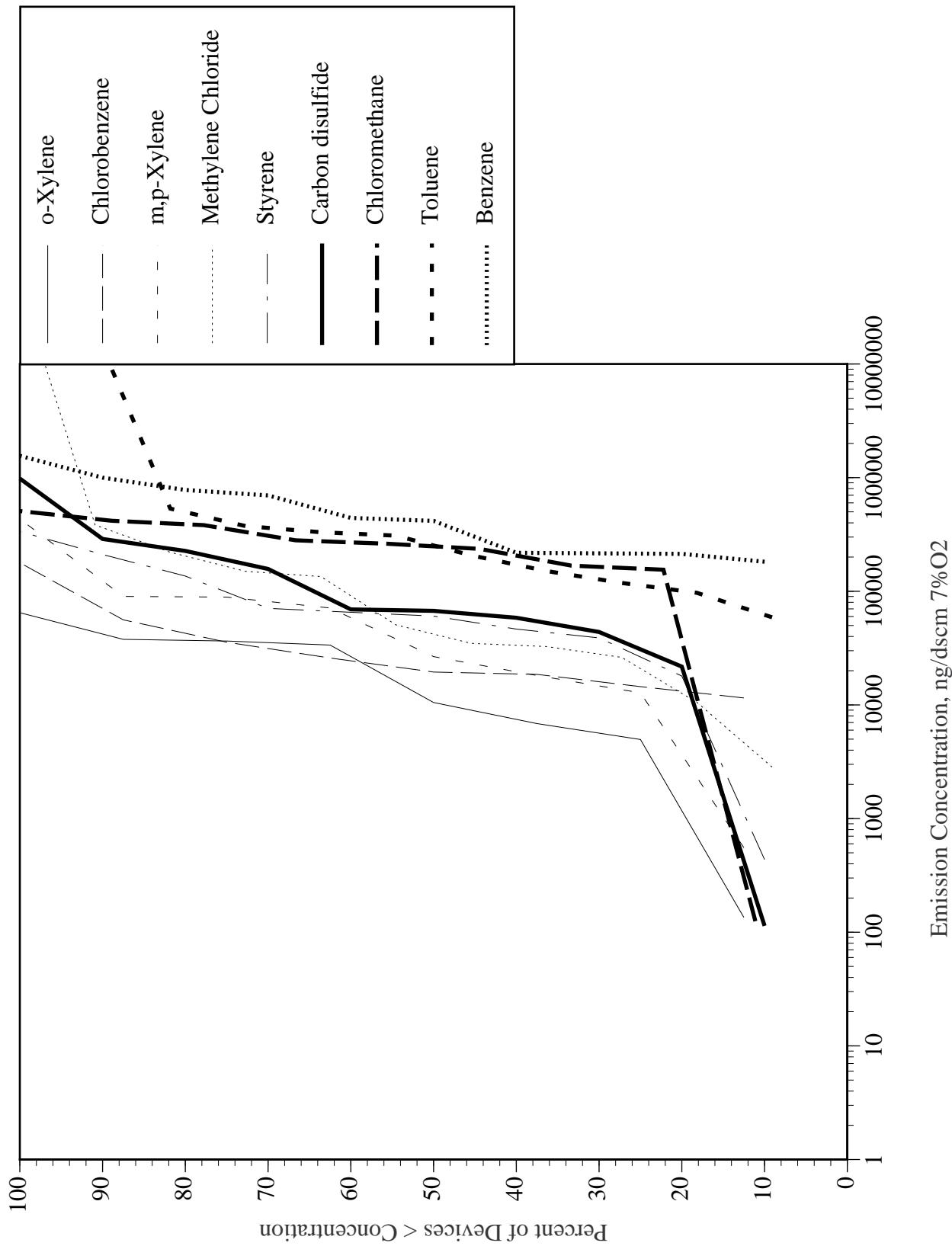


Figure 7a. CAAA volatile organic emission concentration distributions for cement kilns (continued).

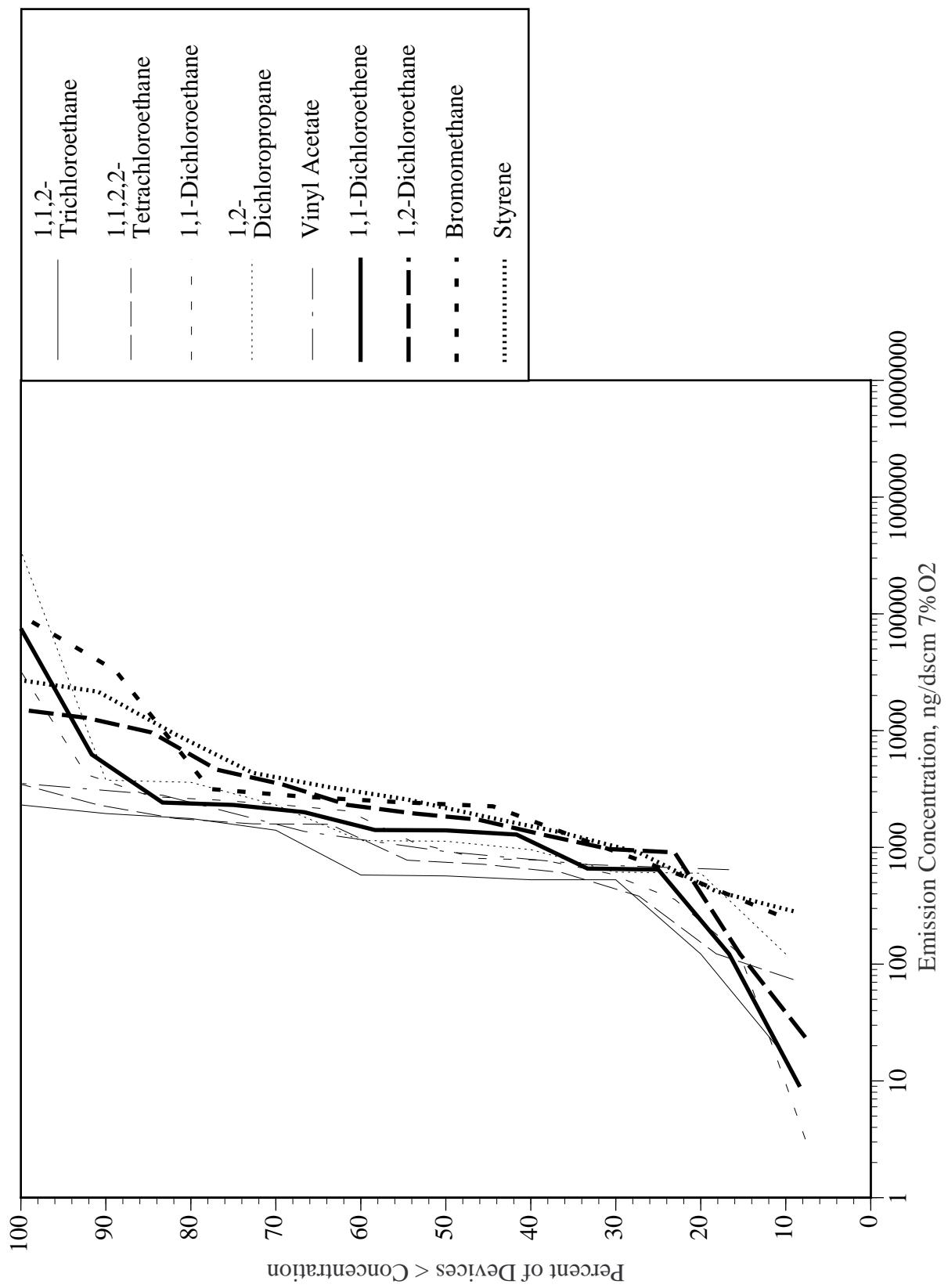


Figure 7b. CAAA volatile organic emission concentration distributions for incinerators.

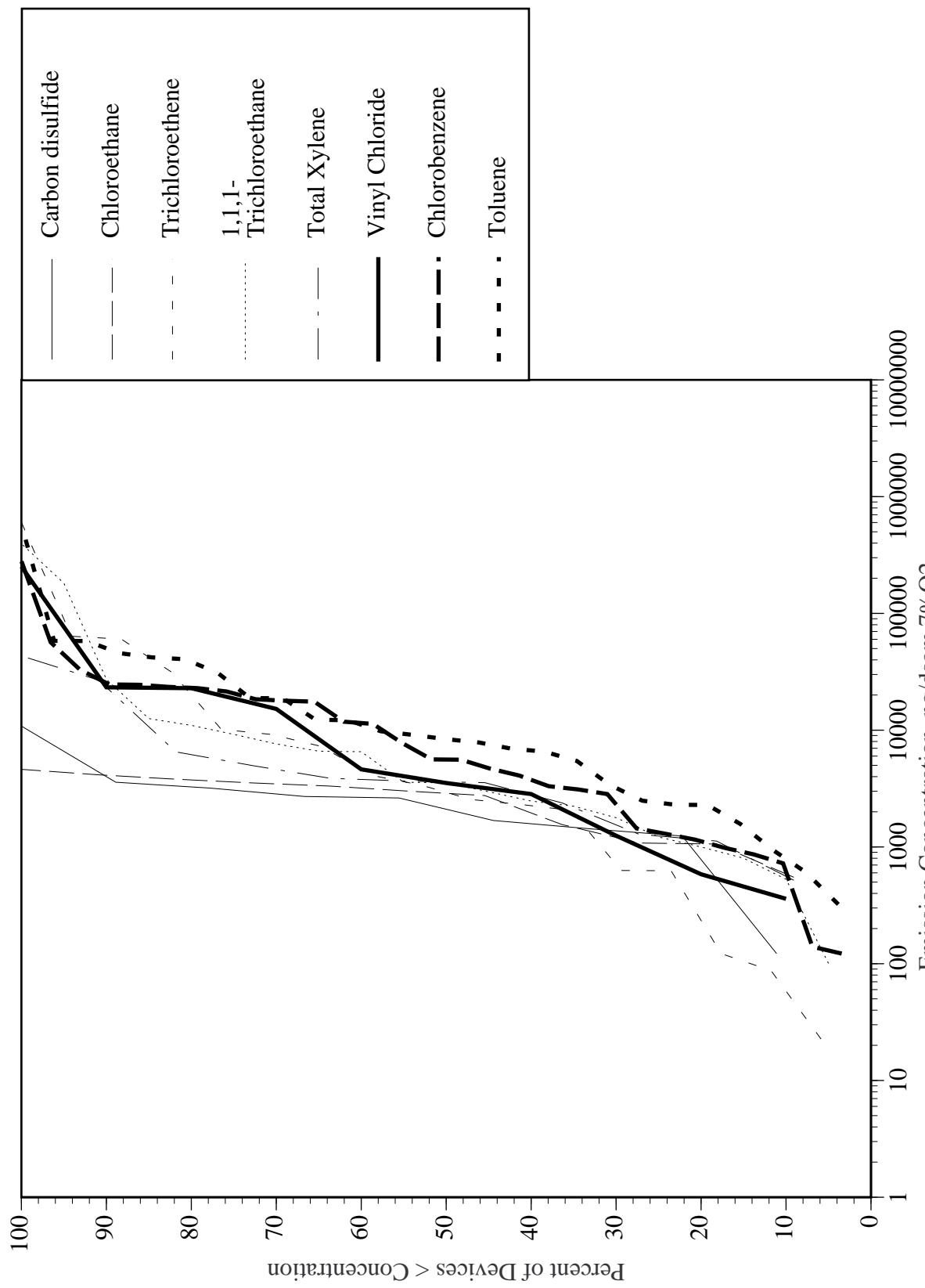


Figure 7b. CAAA volatile organic emission concentration distributions for incinerators (continued).

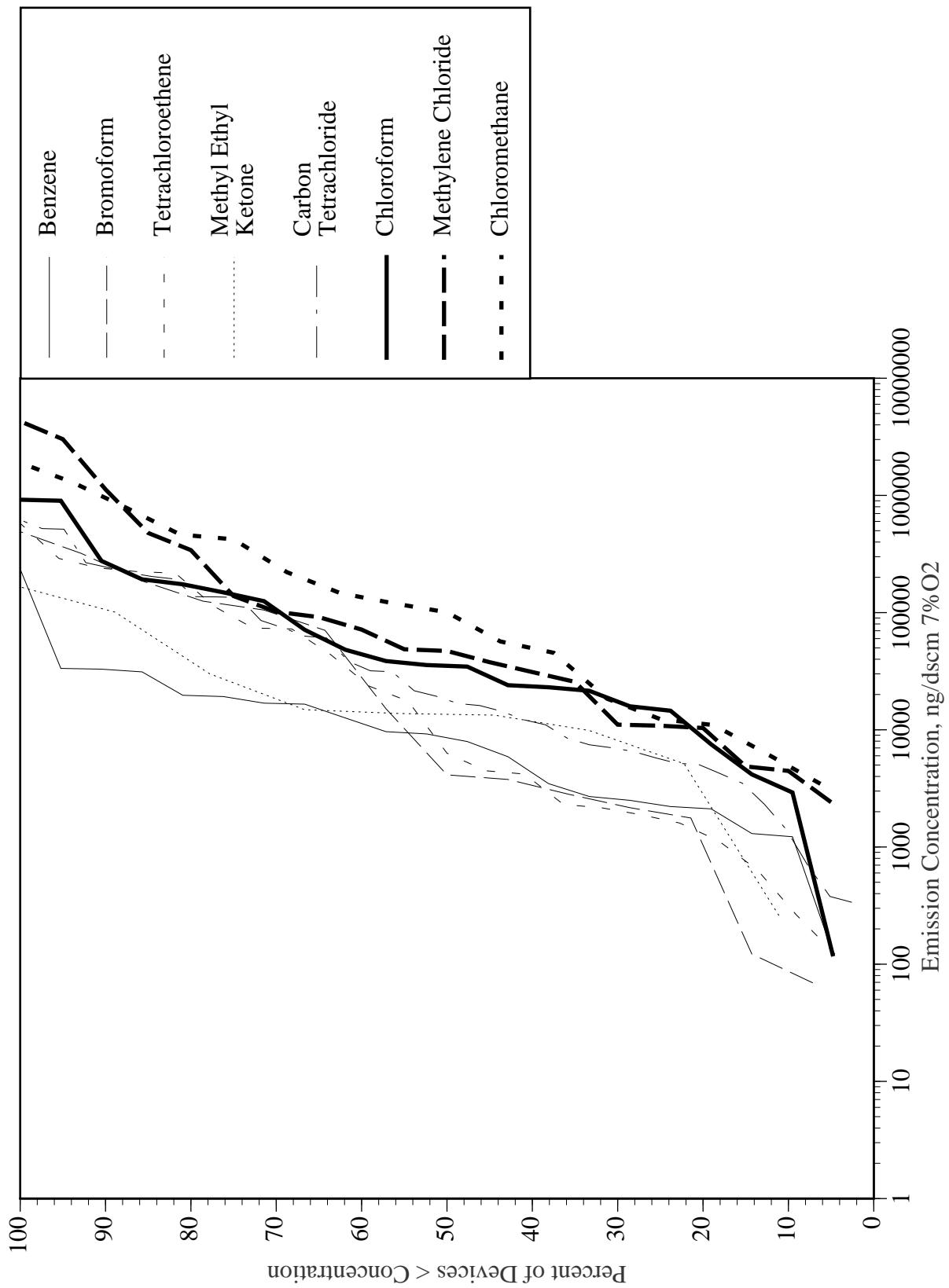


Figure 7b. CAAA volatile organic emission concentration distributions for incinerators (continued).

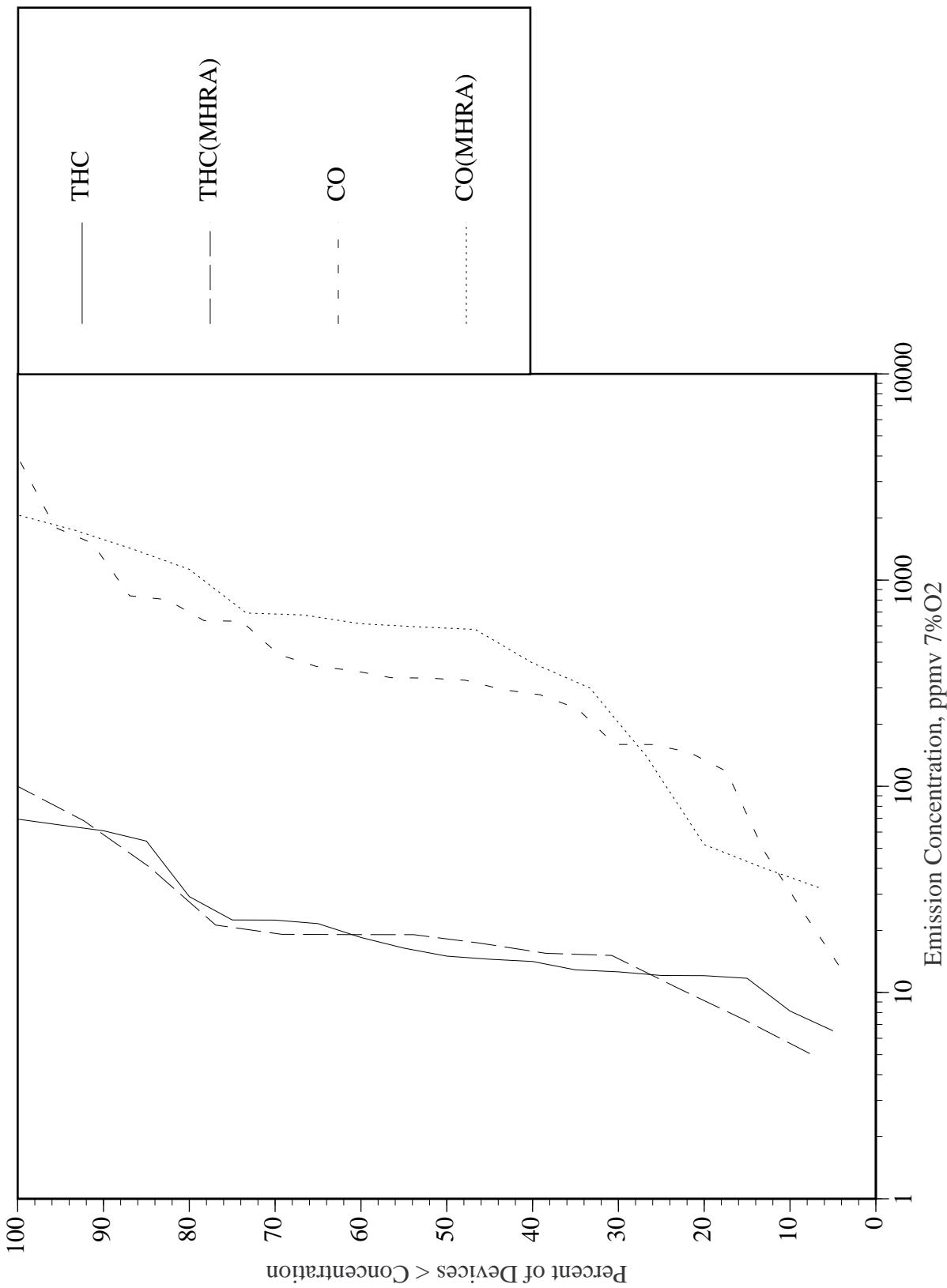


Figure 8a. CO and THC emission concentration distributions for cement kilns.

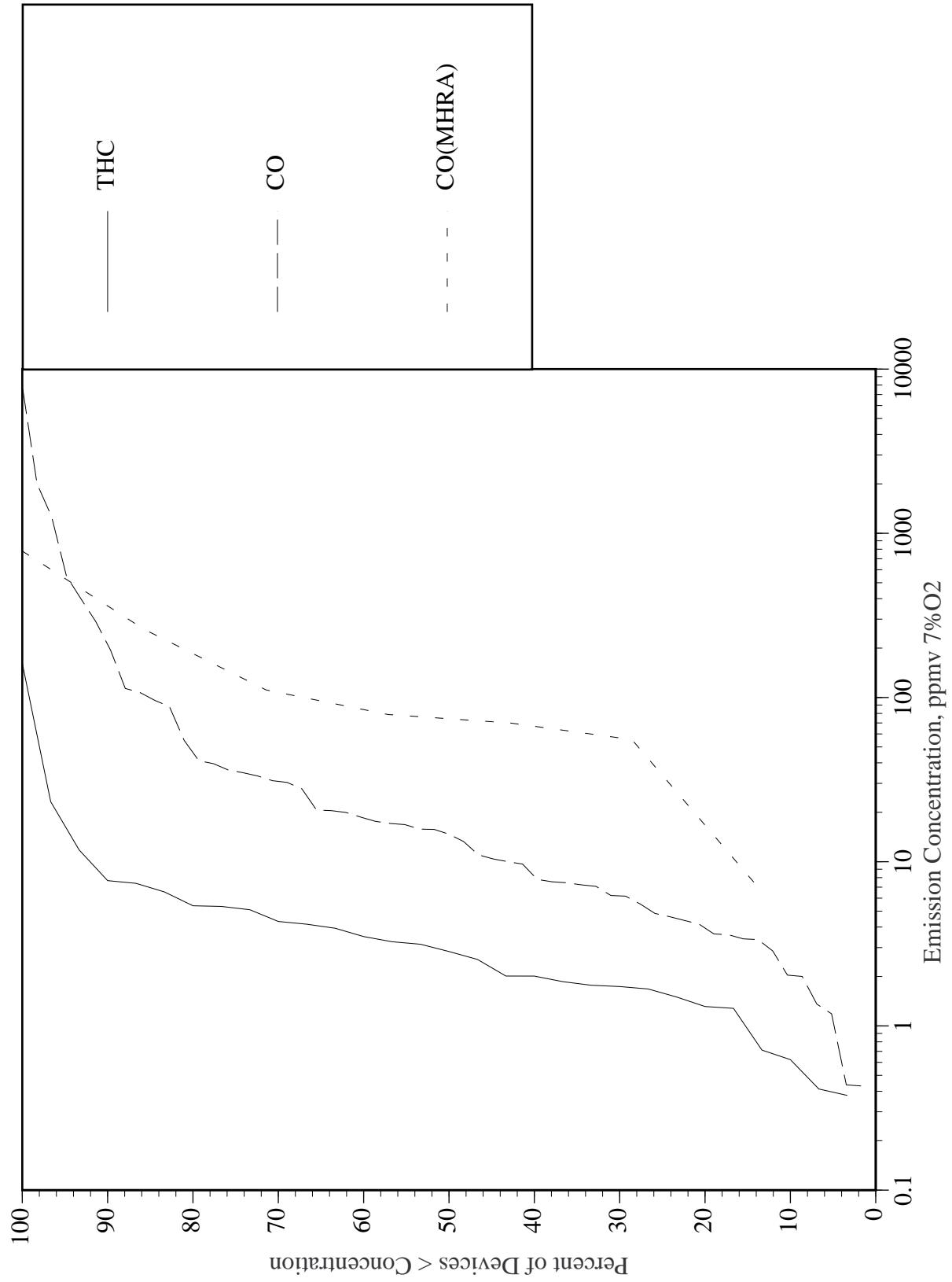


Figure 8b. CO and THC emission concentration distributions for incinerators.

TABLE 3. QA/QC STATUS SUMMARY.

QA EVALUATION PARAMETERS		STATUS
• Review Sampling and Analysis Procedures		Not Conducted
• Check and Record Primary QA/QC Parameters		
-Field Blanks	High Priority SVOC and Chlorobenzene	
-Spikes (Surrogates, Internal Standards, Laboratory Control)	High Priority SVOC and Chlorobenzene	
-Duplicates	High Priority SVOC and Chlorobenzene	
• Record Detection Limits for Detected and Nondetected	Nondetected Only	
• Detailed Calculation Checks		Not Conducted
-How were nondetects handled		Not Conducted
-How were blanks handled		Not Conducted
-Correct calculations performed		Not Conducted
• Document Design and Operation During Test		
-HAP Feed levels (Spike, Fuel, Waste, Raw Materials)	All Tests	
-Combustion and APC Device Design and Operation	All Tests	
-Condition Description	All Tests	
• Outlier Analysis		Visual Inspection of MACT and Expanded Pool
-Identify using statistical tests or visual inspection		MACT and Expanded Pool
-Eliminate outliers with documented problems		MACT and Expanded Pool
-Correct outliers if possible		MACT and Expanded Pool
• Review Results and QA/QC Discussion for Problems		MACT and Expanded Pool

## SECTION 3.0

### PROCESS DATA SUMMARY

This section summarizes process feed characteristics from all source tests evaluated for cement kilns, LWA kilns, and incinerators. Tables 4 and 5 provide statistics for the waste and total feed concentrations, respectively. The waste includes the contribution of any spikes if present. The total feed includes the contributions of the raw materials, waste, spike, and fuel. Total feed concentrations are not provided for incinerators because these sources do not feed raw materials and the primary feed is waste. Each table provides the mean and median concentrations of all emitting processes, the maximum and minimum concentrations, the relative standard deviation, number of runs, and detection ratio “detect ratio”. An emitting process is a collection of combustion devices which emit to a common stack or collection of stacks. For example, a facility may have two combustion devices whose emissions are combined and exhausted through a common stack. This would be classified as a single emitting process. However, if each combustion device had its own stack, each device would be considered as a separate emitting process. The detection ratio is the ratio of the sum of detected values to the sum of detected and non-detected values. A detect ratio of one indicates all of the data was detected. A detect ratio of zero indicates all of the data was not detected. All numbers are presented to three significant digits.

To provide a better understanding of the feed variability indicated in Tables 4 and 5, Figures 9 and 10 are provided which show the percent of emitting processes with total and waste feed concentrations, respectively, less than a given value. For example, in Figure 9a, 90 percent of the cement kiln emitting processes had mercury total feed concentrations less than approximately 1e-05 lbs mercury feed/lbs total feed. The figures provide only metals and chlorine results. Overall mercury had the lowest concentrations in the waste and total feed and lead had the highest.

TABLE 4. SELECTED WASTE FEED CONCENTRATIONS FOR HAZARDOUS WASTE COMBUSTION.

System Type	Category	Substance	Mean, Wt. %	Median, Wt. %	Minimum, Wt. %	Maximum, Wt. %	Rel. Std. Deviation, %*	Runs	Detect Ratio**
CEMENT KILN	Halogens	Chlorine	3	2.89	0.000205	9.07	47.4	241	0.999161
CEMENT KILN	Metals	Antimony	0.016	0.00243	0.00005	0.11	198	123	0.855
CEMENT KILN	Metals	Arsenic	0.0657	0.0173	0.0000825	2.1	306	142	0.9716
CEMENT KILN	Metals	Barium	0.0917	0.0592	0.000177	0.632	128	133	1
CEMENT KILN	Metals	Beryllium	0.0041	0.000963	0.00001	0.0358	177	135	0.836
CEMENT KILN	Metals	Cadmium	0.0276	0.0137	0.000025	0.187	139	151	0.986
CEMENT KILN	Metals	Chromium	0.2	0.132	0.00108	1.27	122	151	0.99999879
CEMENT KILN	Metals	Chromium (Hex)	0.00671	0.00694	0.00625	0.00695	5.93	3	1
CEMENT KILN	Metals	Lead	0.216	0.199	0.0000825	0.676	76.4	151	0.9933
CEMENT KILN	Metals	Mercury	0.0112	0.0000621	0.00000474	0.405	532	131	0.841
CEMENT KILN	Metals	Nickel	0.00285	0.00351	0.000204	0.0061	56.4	17	1
CEMENT KILN	Metals	Selenium	0.0000976	0.0000824	0.00005	0.000191	57.2	9	0.667
CEMENT KILN	Metals	Silver	0.00156	0.00029	0.000025	0.0491	453	124	0.611
CEMENT KILN	Metals	Thallium	0.000889	0.000211	0.000011	0.00736	174	122	0.261
CEMENT KILN	SVOC	1,2,4-Trichlorobenzene	2.79	2.88	0.0139	4.93	47.7	28	0.987
CEMENT KILN	SVOC	1,2-Dichlorobenzene	0.69	0.543	0.0499	1.87	90.2	8	0.99868
CEMENT KILN	SVOC	Trichlorobenzene	2.88	3.04	2.31	3.12	13.2	4	1
CEMENT KILN	VOC	1,1,1-Trichloroethane	1.39	1.3	0.318	3.12	48	45	0.9999585
CEMENT KILN	VOC	Carbon Tetrachloride	0.245	0.0763	0.01	0.708	124	7	0.571
CEMENT KILN	VOC	Methylene Chloride	0.423	0.41	0.4	0.46	7.59	3	1
CEMENT KILN	VOC	Tetrachloroethane	1.11	1.12	0.713	1.49	35.1	3	1
CEMENT KILN	VOC	Tetrachloroethene	1.54	1.43	0.144	4.26	59.7	43	1
CEMENT KILN	VOC	Trichloroethene	1.91	2.09	1.19	2.39	20.8	7	0.999805
INCINERATOR	Halogens	Chlorine	16.7	9.52	0.000352	97.7	114	402	0.9302
INCINERATOR	Metals	Antimony	0.0455	0.000936	0.000000944	0.777	316	119	0.553
INCINERATOR	Metals	Arsenic	0.003	0.000602	9.65E-08	0.0335	197	161	0.711
INCINERATOR	Metals	Barium	0.0309	0.00662	0.00000472	0.239	190	123	0.849
INCINERATOR	Metals	Beryllium	0.000431	0.0000456	1.89E-08	0.00554	235	129	0.504
INCINERATOR	Metals	Cadmium	0.00534	0.000212	9.44E-09	0.119	272	167	0.689
INCINERATOR	Metals	Chromium	0.0261	0.00264	9.44E-08	0.519	358	167	0.888
INCINERATOR	Metals	Lead	0.0771	0.0062	0.000000189	1.58	308	168	0.87
INCINERATOR	Metals	Mercury	0.000732	0.0000393	0.00000003	0.0715	777	159	0.674
INCINERATOR	Metals	Nickel	0.0423	0.00121	0.0000201	1.02	419	53	0.813
INCINERATOR	Metals	Selenium	0.000174	0.0000287	0.000000189	0.0008	140	29	0.458
INCINERATOR	Metals	Silver	0.00208	0.000324	9.44E-09	0.0341	268	109	0.488
INCINERATOR	Metals	Thallium	0.0018	0.0002	0.000000189	0.0148	209	93	0.359
INCINERATOR	SVOC	1,2,3-Trichlorobenzene	5.33	1.58	1.39	15.6	107	12	0.999999933
INCINERATOR	SVOC	1,2,4-Trichlorobenzene	0.0817	0.0989	0.014	0.138	67	7	1
INCINERATOR	SVOC	1,2-Dichlorobenzene	1.98	1.37	0.05	5.87	81.5	46	0.9883
INCINERATOR	SVOC	2,4,6-Trinitrotoluene	71.2	69.1	50	97.5	27.1	9	1
INCINERATOR	SVOC	Dichlorobenzene	32	45.7	3.87	51.5	61.8	15	1
INCINERATOR	SVOC	Hexachlorobenzene	20	24.3	0.00000545	39.1	78	15	0.724
INCINERATOR	SVOC	Hexachloroethane	14.2	1.36	0.00000262	59	147	62	0.802
INCINERATOR	SVOC	Trichlorobenzene	9.8	9.6	9	11	8.7	4	1
INCINERATOR	VOC	1,1,1-Trichloroethane	25.2	35.4	0.000442	39.6	59.7	13	1
INCINERATOR	VOC	1,2-Dichloroethane	18.1	8.06	0.05	72.6	130	19	0.9474
INCINERATOR	VOC	Carbon Tetrachloride	6.63	3.33	0.000001	38.6	131	229	0.9473
INCINERATOR	VOC	Chlorobenzene	9.24	3.17	0.000001	62.8	134	140	0.9254
INCINERATOR	VOC	Methyl Ethyl Ketone	14.6	1.97	0.0000138	55.4	145	29	0.9655
INCINERATOR	VOC	Methylene Chloride	5.9	4.88	0.00000342	12.6	78.3	26	0.99867
INCINERATOR	VOC	o-Dichlorobenzene	2.07	0.357	0.136	14.5	183	38	0.9896
INCINERATOR	VOC	Tetrachloroethene	8.79	6	1.75	72.1	110	77	1
INCINERATOR	VOC	Trichloroethene	6.33	5.64	3.57	10.2	39.6	18	1
INCINERATOR	VOC	Trichlorofluoroethane	5.74	3.28	0.325	13.2	95.6	14	1
INCINERATOR	VOC	Trichlorofluoromethane	8.18	6.7	1.79	21	71.3	18	0.999999996
LWA KILN	Halogens	Chlorine	4.13	2.56	0.000118	14.1	101	45	1
LWA KILN	Metals	Antimony	0.00677	0.0042	0.0000028	0.0462	167	45	0.9556
LWA KILN	Metals	Arsenic	0.0137	0.00241	0.0000026	0.0434	101	45	0.867
LWA KILN	Metals	Barium	0.013	0.0134	0.000007	0.0347	61.9	45	0.9333
LWA KILN	Metals	Beryllium	0.0025	0.00126	0.000007	0.00908	107	42	0.9286
LWA KILN	Metals	Cadmium	0.0262	0.00288	0.000045	0.0872	107	45	0.9333
LWA KILN	Metals	Chromium	0.023	0.0178	0.0001	0.0487	77.8	45	1
LWA KILN	Metals	Chromium (Hex)	0.0281	0.0233	0.013	0.0529	47.1	21	1
LWA KILN	Metals	Lead	0.322	0.0529	0.000021	0.887	101	45	0.9556
LWA KILN	Metals	Mercury	0.000726	0.0000219	0.000006	0.00234	140	45	0.9333
LWA KILN	Metals	Nickel	0.0519	0.053	0.0444	0.056	7.89	15	1
LWA KILN	Metals	Selenium	0.00218	0.00224	0.00186	0.00237	8.44	15	1
LWA KILN	Metals	Silver	0.000692	0.000142	0.0000483	0.00302	123	45	0.622
LWA KILN	Metals	Thallium	0.00149	0.000097	0.000003	0.00473	137	45	0.622
LWA KILN	VOC	Carbon Tetrachloride	2.98	1.7	0.887	12.3	119	14	1
LWA KILN	VOC	Chlorobenzene	2.98	1.7	0.887	12.3	119	14	1
LWA KILN	VOC	Tetrachloroethene	2.98	1.7	0.887	12.3	119	14	1

TABLE 4. SELECTED WASTE FEED CONCENTRATIONS FOR HAZARDOUS WASTE COMBUSTION.

System Type	Category	Substance	Mean, Wt. %	Median, Wt. %	Minimum, Wt. %	Maximum, Wt. %	Rel. Std. Deviation, %*	Runs	Detect Ratio**
LWA KILN	VOC	Trichloroethane	2.98	1.71	0.887	12.3	119	14	1

\*Relative standard deviation - 100\*standard deviation/mean

\*\*Detect ratio - Ratio of sum of detected runs to nondetected and detected runs

TABLE 5. SELECTED TOTAL FEED CONCENTRATIONS FOR HAZARDOUS WASTE COMBUSTION.

System Type	Category	Substance	Mean, Wt. %	Median, Wt. %	Minimum, Wt. %	Maximum, Wt. %	Rel. Std. Deviation, %*	Runs	Detect Ratio**
CEMENT KILN	Halogens	Chlorine	0.279	0.237	0.01	1.46	74.9	242	0.874
CEMENT KILN	Metals	Antimony	0.00223	0.000709	0.0000371	0.0181	170	142	0.418
CEMENT KILN	Metals	Arsenic	0.00422	0.00138	0.000134	0.0762	182	156	0.88
CEMENT KILN	Metals	Barium	0.0129	0.0108	0.00147	0.0466	76.5	148	0.886
CEMENT KILN	Metals	Beryllium	0.000228	0.0000897	0.0000112	0.000943	119	159	0.769
CEMENT KILN	Metals	Cadmium	0.00146	0.000889	0.0000194	0.0085	107	159	0.9515
CEMENT KILN	Metals	Chromium	0.0138	0.00787	0.000579	0.0669	106	156	0.999143
CEMENT KILN	Metals	Lead	0.0143	0.00988	0.0002	0.0832	104	159	0.963
CEMENT KILN	Metals	Mercury	0.00058	0.0000121	0.00000189	0.0191	464	145	0.541
CEMENT KILN	Metals	Nickel	0.00095	0.000657	0.000452	0.0026	70.3	32	0.87
CEMENT KILN	Metals	Selenium	0.000551	0.000351	0.0000646	0.00145	95.7	12	0.667
CEMENT KILN	Metals	Silver	0.000516	0.000099	0.0000675	0.00816	243	142	0.266
CEMENT KILN	Metals	Thallium	0.000804	0.000196	0.0000444	0.0102	244	142	0.405
CEMENT KILN	SVOC	1,2,4-Trichlorobenzene	0.0534	0.0538	0.0527	0.0538	1.25	3	0.878
CEMENT KILN	VOC	1,1,1-Trichloroethane	0.104	0.105	0.103	0.105	1.08	3	0.99521
LWA KILN	Halogens	Chlorine	0.209	0.206	0.051	0.467	48.4	33	0.9092
LWA KILN	Metals	Antimony	0.000876	0.000574	0.0000211	0.00602	158	48	0.87
LWA KILN	Metals	Arsenic	0.0027	0.00192	0.000193	0.0128	86.5	48	0.999892
LWA KILN	Metals	Barium	0.00919	0.00786	0.000297	0.0222	69.3	48	0.9999642
LWA KILN	Metals	Beryllium	0.000453	0.000356	0.000007	0.00146	96.3	48	0.9355
LWA KILN	Metals	Cadmium	0.00382	0.00233	0.000045	0.0218	112	48	0.9356
LWA KILN	Metals	Chromium	0.00732	0.00822	0.0000828	0.0139	49.7	48	0.9499
LWA KILN	Metals	Lead	0.0386	0.0224	0.000692	0.123	98	48	0.99847
LWA KILN	Metals	Mercury	0.0000804	0.00000793	0.00000424	0.000245	125	48	0.788
LWA KILN	Metals	Nickel	0.00913	0.00892	0.00704	0.0111	10.6	15	1
LWA KILN	Metals	Selenium	0.00029	0.000292	0.000273	0.000307	3.41	15	1
LWA KILN	Metals	Silver	0.00021	0.0000731	0.00000953	0.00123	110	48	0.627
LWA KILN	Metals	Thallium	0.000523	0.000132	0.0000447	0.00459	207	48	0.895

\*Relative standard deviation - 100\*standard deviation/mean

\*\*Detect ratio - Ratio of sum of detected runs to nondetected and detected runs

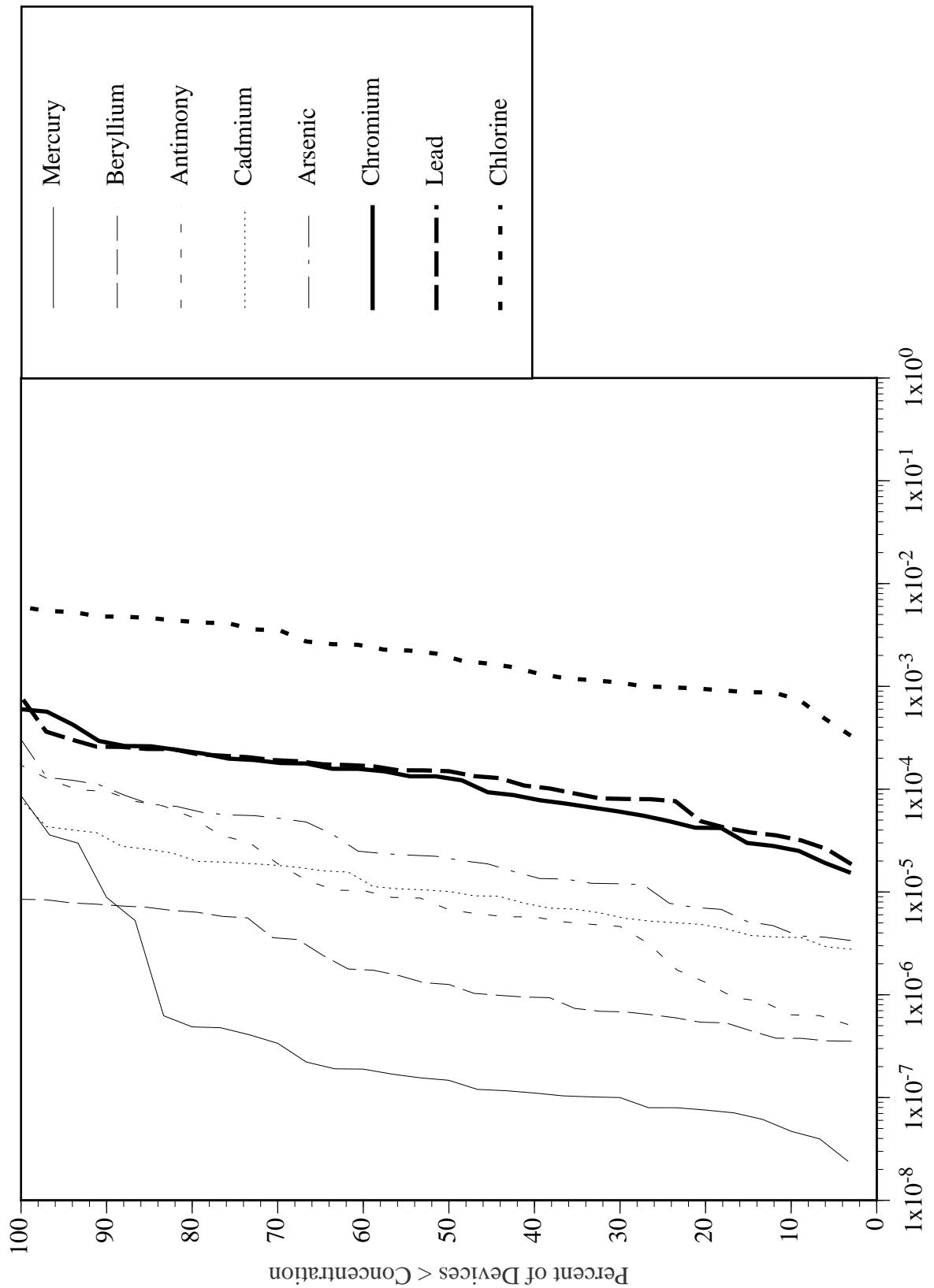


Figure 9a. Total feed metal and chlorine concentration distributions for cement kilns.

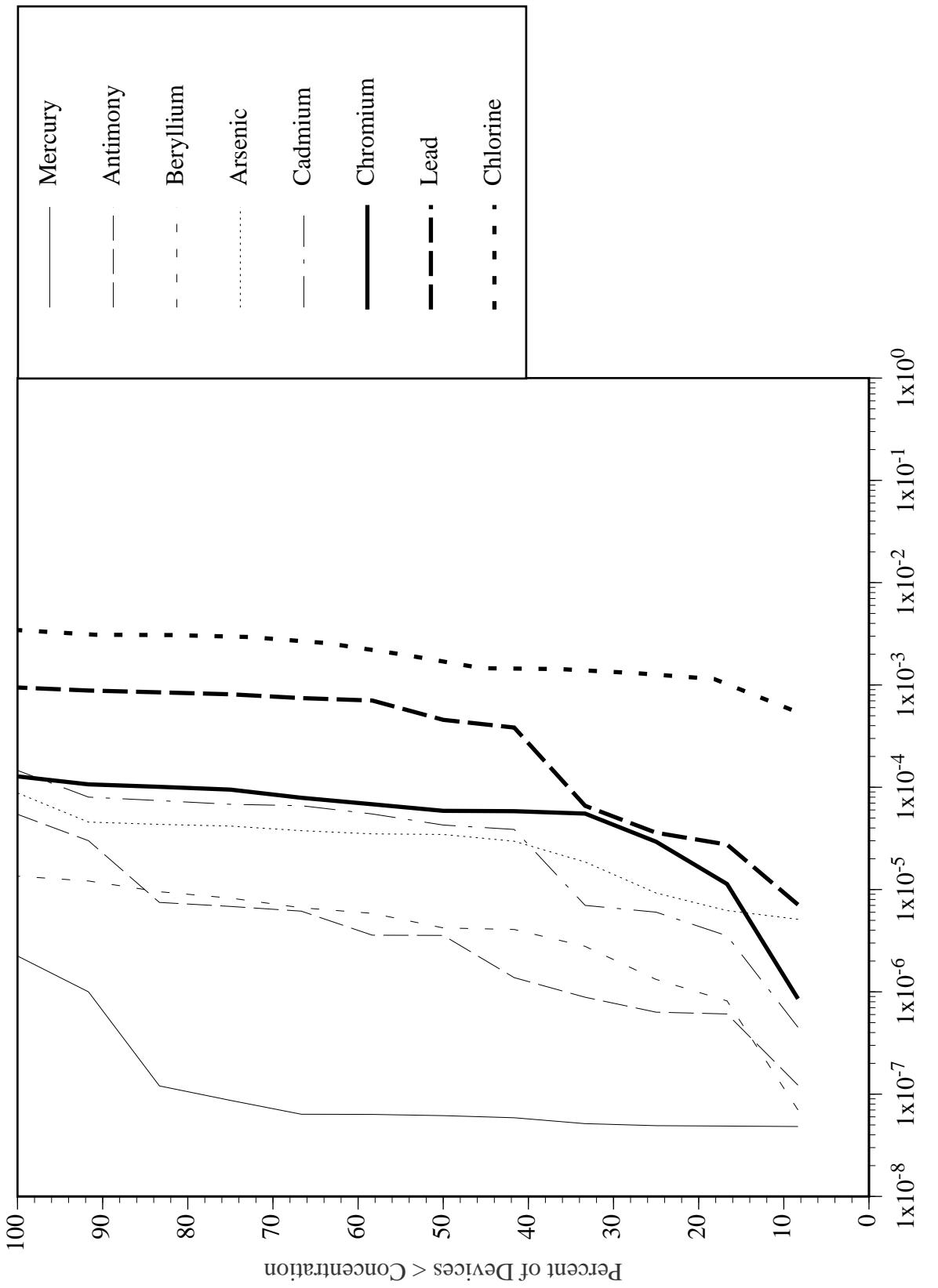


Figure 9b. Total feed metal and chlorine concentration distributions for LWA kilns.

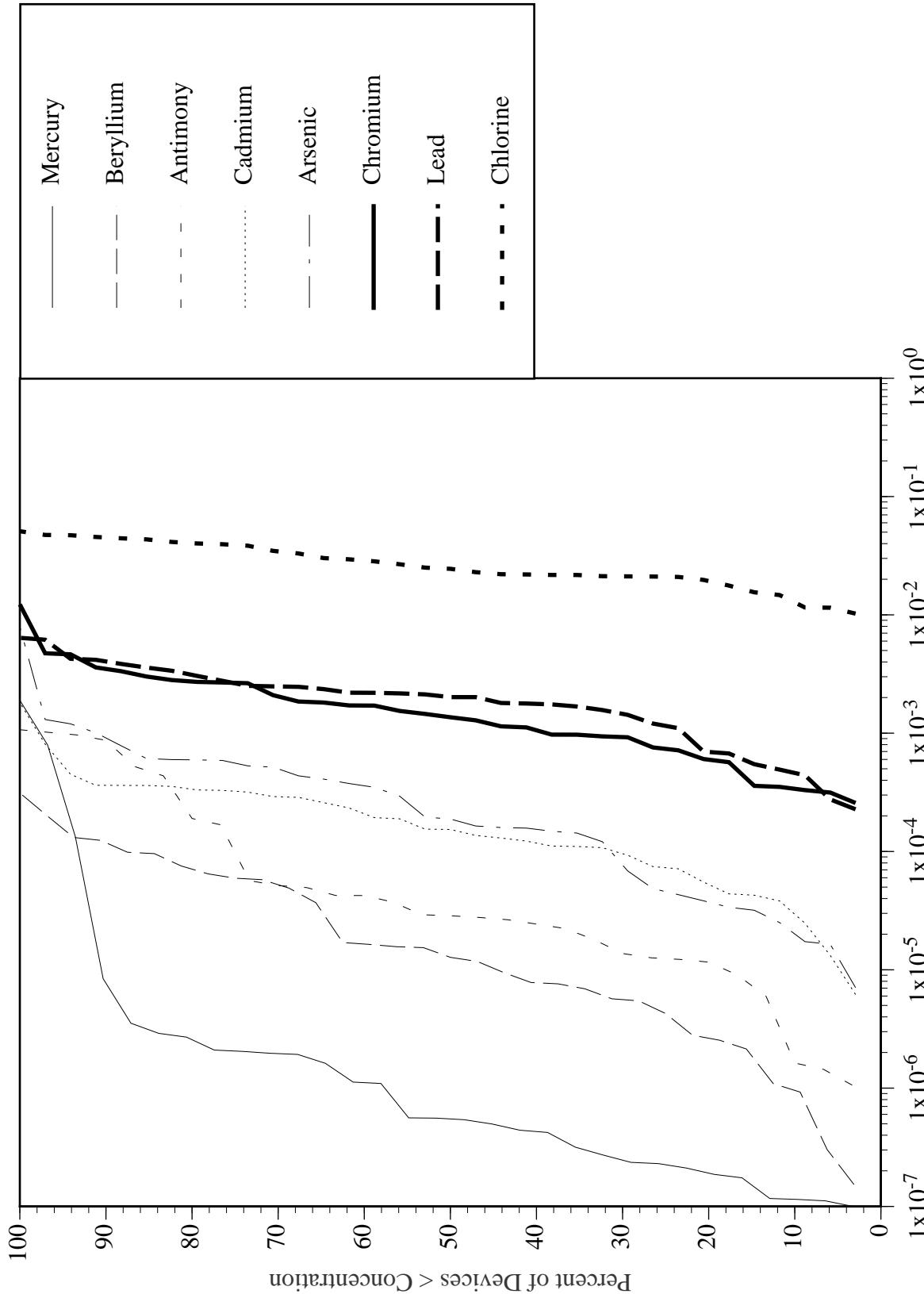


Figure 10a. Waste feed metal and chlorine concentration distributions for cement kilns

Feed Concentration, lbs Element Feed/lbs Total Waste Feed

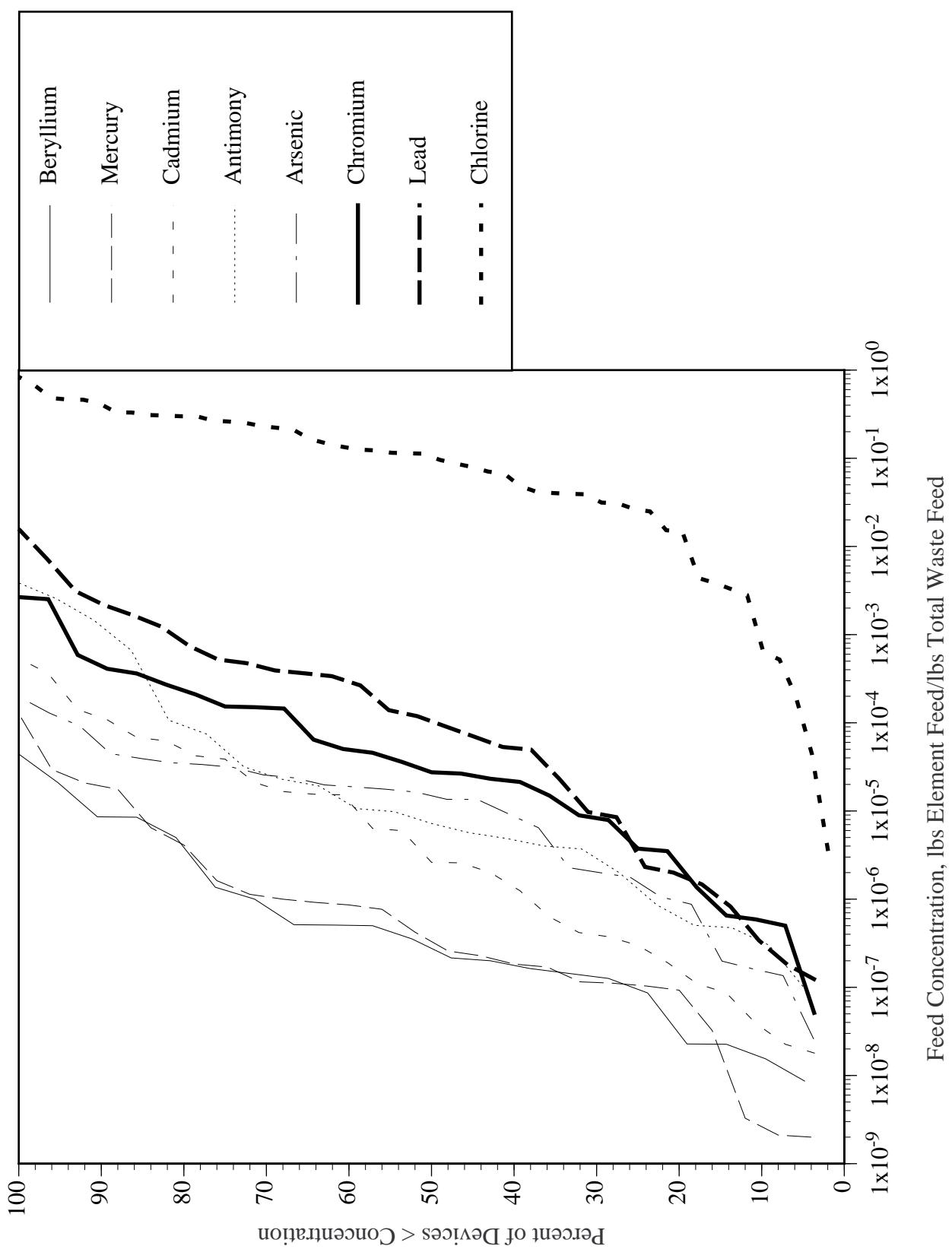


Figure 10b. Waste feed metal and chlorine concentration distributions for incinerators.

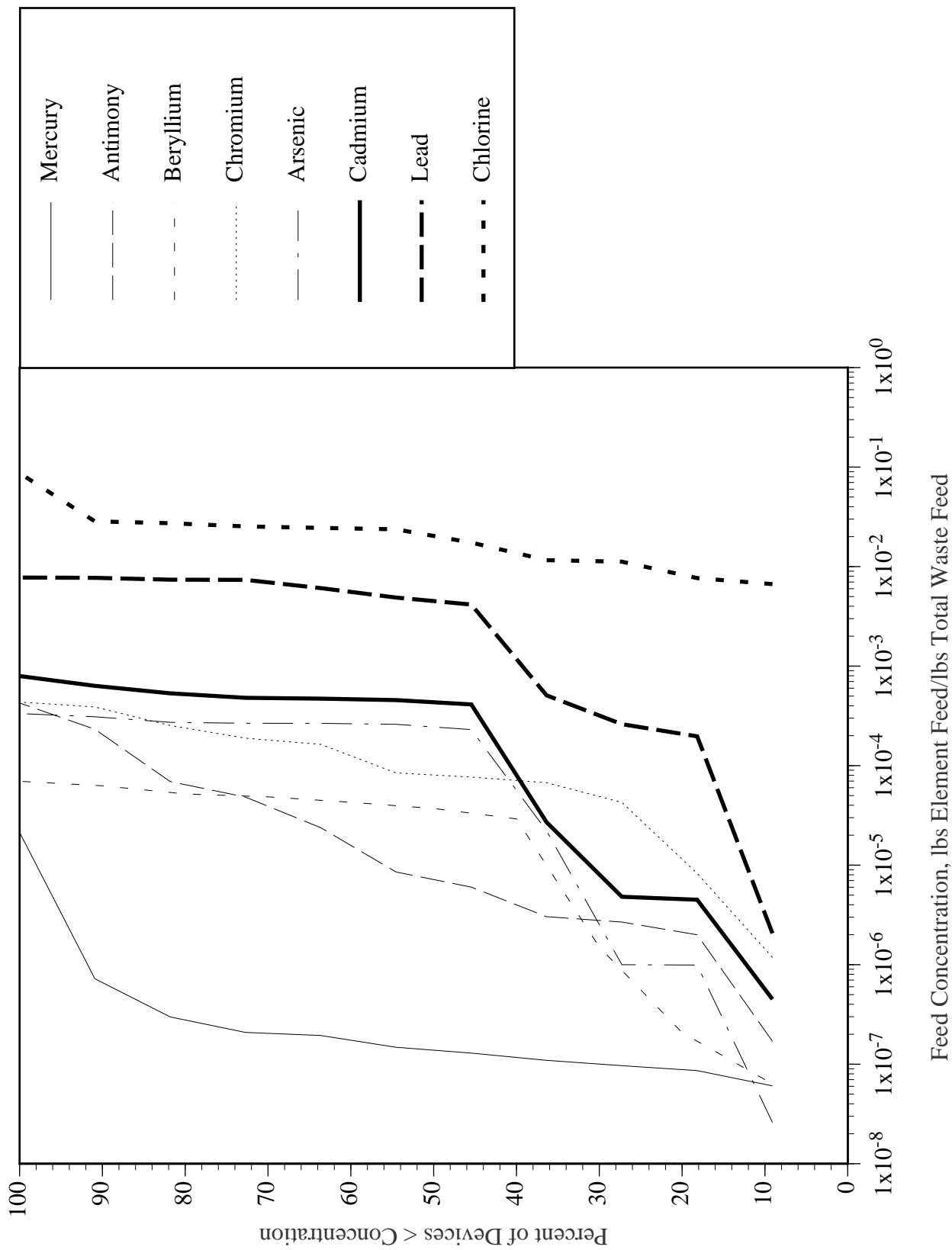


Figure 10c. Waste feed metal and chlorine concentration distributions for LWA kilns.